







BULLETIN OF NORTH CAROLINA AGRICULTURAL AND TECHNICAL STATE UNIVERSITY

GREENSBORO, N.C.

USPS 401-070



BULLETIN OF NORTH CAROLINA AGRICULTURAL AND TECHNICAL STATE UNIVERSITY

VOL. 69, No. 7

MAY, 1982

BULLETIN OF NORTH CAROLINA AGRICULTURAL AND TECHNICAL STATE UNIVERSITY— Published monthly eight times a year except January, September, October, and November by North Carolina Agricultural and Technical State University, 312 North Dudley Street, Greensboro, North Carolina 27411.

Application to Mail at Second Class Postage Rates Pending at Greensboro, North Carolina

Postmaster: Send Address changes to BULLETIN OF NORTH CAROLINA AGRICULTURAL AND TECHNICAL
STATE UNIVERSITY, 312 North Dudley Street, Greensboro, North Carolina 27411.



NORTH CAROLINA AGRICULTURAL AND TECHNICAL STATE UNIVERSITY

GREENSBORO 27411 (919) 379-7940

TO: STUDENTS AND PROSPECTIVE STUDENTS

North Carolina Agricultural and Technical State University is a unique comprehensive state-supported University. It is the only comprehensive University in this State which has both a School of Engineering and a School of Agriculture—in consonance with its land-grant tradition. In addition, strong program offerings are provided in the Schools of Arts and Sciences, Business and Economics, Education and Nursing. Additionally, the Institution has a viable Graduate School. Consequently, matriculating students are provided unique and varied programmatic offerings.

The University has a distinguished faculty—one committed to excellence in teaching, research and public services. Moreover, its Alumni Association is one of the most active and productive alumni organizations in the State and Nation. Its support for the University and its mission has been exemplary.

This Catalogue provides specific information you will need to know about the University. However, a University is more than its program offerings, its faculty, its students, its alumni or its campus. A University can best be described as a spirit—Aggie Spirit. North Carolina Agricultural and Technical State University—the Institution—would be a barren place without the presence and spirit of its human resources.

AGGIE SPIRIT is an integral part of the Institution's heritage and tradition. It is depicted in the lives of both the Institution's Torchbearers as well as the outstanding men and women who left the University their legacy. The heritage and traditions of the University are evident in every facet of University life. When one combines this heritage with the quality of our faculty and the soundness of our mission related programs, one readily discerns the greatness of the campus.

I commend this spirit, these programs and this University to all students and prospective students.

Edward B. Fort Chancellor

NORTH CAROLINA AGRICULTURAL AND TECHNICAL STATE UNIVERSITY GREENSBORO, NORTH CAROLINA THE UNDERGRADUATE CATALOGUE 1981-82

NORTH CAROLINA AGRICULTURAL AND TECHNICAL STATE UNIVERSITY Greensboro

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UNIVERSITY CALENDAR 1981-82

Fall Semester, 1981

Administrator's Conference August 13 - Thursday August 14 - Friday Faculty-Staff Conference August 16 - Sunday Freshman and Transfer Students Report August 17 - 19 - Monday - Wednesday Orientation and Advisement of Freshman and Transfer Students August 20 - 22 - Thursday - Saturday Registration August 24 - Monday Classes Begin August 24 - Monday Late Registration Begins Holiday (Labor Day) September 7 - Monday September 8 - Tuesday Classes Resume at 7:00 a.m. September 11 - Friday Late Registration Ends September 11 - Friday Last Day to Add a Course October 9 - Friday Last day to Drop a Course Without Grade Evaluation October 14 - Wednesday Fall Semester Convocation October 16 - Friday Last Day to Apply for Fall Semester Graduation October 17 - Saturday Fall Break Begins at 12:00 Noon October 21 - Wednesday Fall Break Ends at 7:00 a.m. November 10 - 13 - Tuesday - Friday Pre-Registration for Spring Semester November 25 - Wednesday Thanksgiving Holidays Begin at 1:00 p.m. Thanksgiving Holidays End at 7:00 a.m. November 30 - Monday December 12 - Saturday Classes End December 14 - Monday Reading Day December 15 - Tuesday Final Examinations Begin December 19 - Saturday Final Examinations End December 19 - Saturday Fall Semester Ends, Christmas Holidays Begin December 21 - Monday All Grades are Due in the Office of Registration and Records By 12:00 Noon

UNIVERSITY CALENDAR 1981-82

Faculty and Staff Report

Spring Semester, 1982

January 4 - Monday

January 4 - Monday Freshmen and Transfer Students Report January 5 - Tuesday Orientation and Advisement of Freshmen and Transfer Students January 7 - 9 - Thursday - Saturday Registration January 11 - Monday Classes Begin Late Registration Begins January 11 - Monday January 14 - Thursday Last Day to Apply for Graduation Martin Luther King's Birthday January 15 - Friday January 22 - Friday Late Registration Ends January 22 - Friday Last Day to Add a Course February 26 - Friday Last day to Drop a Course Without Grade Evaluation March 6 - Saturday Spring Break Begins at 12:00 Noon March 15 - Monday Spring Break Ends at 7:00 a.m. March 24 - Wednesday Spring Semester Convocation April 5 - 9 - Monday - Friday Pre-Registration for Fall Semester

Easter Holiday

Final

April 26 - 29 - Monday - Thursday

April 30 - Friday

May 1 - Saturday

May 9 - Sunday

May 3 - Monday

May 4 - Tuesday

May 8 - Saturday

May 11 - Tuesday

April 12 - Monday

Students
Grades Due for Graduating Students
Classes End
Commencement
Reading Day
Final Examinations Begin
Final Examinations End, Spring Semester
Ends

All Grades are Due in the Office of Registration and Records By 3:00 p.m.

for

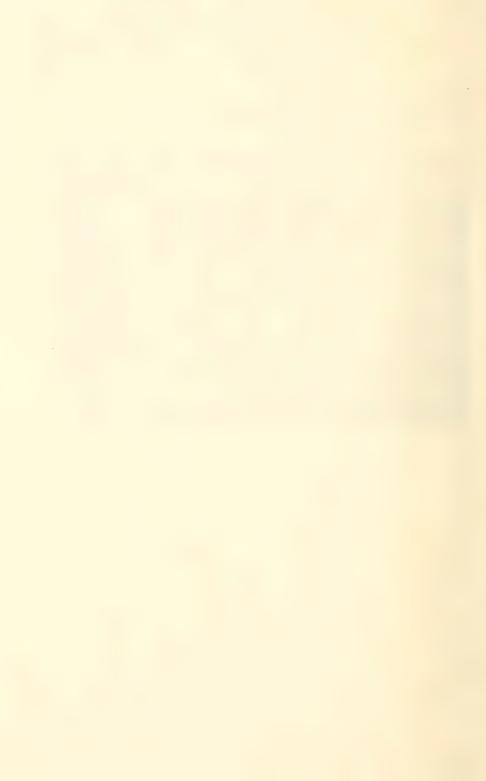
Graduating

Examinations



GENERAL INFORMATION





General Information

Section 1

NORTH CAROLINA AGRICULTURAL AND TECHNICAL STATE UNIVERSITY

HISTORICAL STATEMENT

North Carolina Agricultural and Technical State University was established as the A. and M. College for the "Colored Race" by an act of the General Assembly of North Carolina ratified March 9, 1891. The act read in part:

That the leading object of the institution shall be to teach practical agriculture and the mechanic arts and such branches of learning as relate thereto, not excluding academical and classical instruction.

The College began operation during the school year of 1890-91, before the passage of the state law creating it. This curious circumstance arose out of the fact that the Morrill Act passed by Congress in 1890 earmarked the proportionate funds to be allocated in bi-racial school systems to the two races. The A. and M. College for the White Race was established by the State Legislature in 1889 and was ready to receive its share of funds provided by the Morrill Act in the Fall of 1890. Before the college could receive these funds, however, it was necessary to make provisions for Colored students. Accordingly, the Board of Trustees of the A. and M. College in Raleigh was empowered to make temporary arrangements for these students. A plan was worked out with Shaw University in Raleigh where the College operated as an annex to Shaw University during the years 1890-1891, 1891-1892, and 1892-1893.

The law of 1891 also provided that the College would be located in such city or town in the State as would make to the Board of Trustees a suitable proposition that would serve as an inducement for said location. A group of interested citizens in the city of Greensboro donated fourteen acres of land for a site and \$11,000 to aid in constructing buildings. This amount was supplemented by an appropriation of \$2,500 from the General Assembly. The first building was completed in 1893 and the College opened in Greensboro during

the fall of that year.

In 1915 the name of the institution was changed to The Agricultural and

Technical College of North Carolina by an Act of the State Legislature.

The scope of the college program has been enlarged to take care of new demands. The General Assembly authorized the institution to grant the Master of Science degree in education and certain other fields in 1939. The first Master's degree was awarded in 1941. The School of Nursing was established by an Act of the State Legislature in 1953 and the first class was graduated in 1957.

The General Assembly repealed previous acts describing the purpose of the College in 1957, and redefined its purpose as follows;

"The primary purpose of the College shall be to teach the Agricultural and Technical Arts and Sciences and such branches of learning as related

thereto; the training of teachers, supervisors, and administrators for the public schools of the State, including the preparation of such teachers, supervisors and administrators for the Master's degree. Such other programs of a professional or occupational nature may be offered as shall be approved by the North Carolina Board of Higher Education, consistent with the appropriations made therefor."

The General Assembly of North Carolina voted to elevate the College to the

status of a Regional University effective July 1, 1967.

On October 30, 1971, the General Assembly ratified an Act to consolidate the Institutions of Higher Learning in North Carolina. Under the provisions of this Act, North Carolina Agricultural and Technical State University became a constituent institution of The University of North Carolina effective July 1, 1972.

Six presidents have served the Institution since it was founded in 1891. They are as follows: Dr. J. O. Crosby (1892-1896), Dr. James B. Dudley, (1896-1925), Dr. F. D. Bluford (1925-1955), Dr. Warmoth T. Gibbs (1956-1960), Dr. Samuel DeWitt Proctor, (1960-1964), and Dr. Lewis C. Dowdy, who was elected President April 10, 1964. Dr. Cleon F. Thompson, Jr., served as Interim Chancellor of the Institution from November 1, 1980 until August 31, 1981. Dr. Edward B. Fort assumed Chancellorship responsibilities on September 1, 1981.

PURPOSE AND OBJECTIVES OF THE UNIVERSITY

North Carolina Agricultural and Technical State University is one of the two land-grant institutions located in the State. It is a comprehensive University with an integrated faculty and student body offering degrees at the baccalaureate and master's levels.

The purpose of the University is to provide an intellectual setting where students in higher education may find a sense of identification, belonging, responsibility, and achievement that will prepare them for roles of leadership and service in the communities where they will live and work. In this sense, the University serves as a laboratory for the development of excellence in teaching, research and public service.

The program of the University focuses on the broad fields of agriculture, engineering, technology, business, education, nursing, the liberal arts and

science.

The major objectives of the University as approved by the faculty in 1977 are as follows:

- 1. To help students to improve their communication skills
- 2. To assist students in developing their power of critical thinking
- 3. To aid students in developing self-confidence and a positive self-image
- 4. To assist students in developing in depth competence in at least one subject area
- To insure adequate career preparation for students that will enable them to lead productive lives
- To develop innovative instructional programs that will meet the needs of a diverse student body

- 7. To develop and maintain undergraduate and graduate programs of high academic quality and excellence
- 8. To encourage research and other creative endeavors by the faculty and students
- 9. To identify and help to satisfy educational, cultural, and other public service needs in the service area of the University.

POLICY GOVERNING PROGRAMS AND COURSE OFFERINGS

All provisions, regulations, degree programs, course listings, etc., in effect when this catalogue went to press are subject to revision by the appropriate governing bodies of North Carolina Agricultural and Technical State University. Such changes will not affect the graduation requirements of students who enroll under the provisions of the catalogue.

NONDISCRIMINATION POLICY AND INTEGRATION STATEMENT

NORTH CAROLINA AGRICULTURAL AND TECHNICAL STATE UNI-VERSITY is committed to equality of educational opportunity and does not discriminate against applicants, students, or employees based on race, color, national origin, religion, sex, age, or handicap. Moreover, NORTH CAROLINA AGRICULTURAL AND TECHNICAL STATE UNIVERSITY is open to people of all races and actively seeks to promote racial integration by recruiting and enrolling a larger number of white students.

NORTH CAROLINA A & T STATE UNIVERSITY supports the protections available to members of its community under all applicable Federal laws, including Titles VI and VII of the Civil Rights Act of 1964, Title IX of the Education Amendments of 1972, Sections 799A and 845 of the Public Health Service Act, the Equal Pay and Age Discrimination Acts, the Rehabilitation Act of 1973, and Executive Order 11246.

THE UNIVERSITY OF NORTH CAROLINA

The University of North Carolina is comprised of all the public institutions of higher education in North Carolina that confer degrees at the baccalaureate level or higher. The University was authorized by the State Constitution in 1776, and it was chartered in 1789 by the General Assembly.

The University of North Carolina opened its doors to students at Chapel Hill in 1795. Thereafter, beginning in the latter part of the nineteenth century, the General Assembly of North Carolina has established and supported fifteen other public senior institutions in keeping with Article IX, Section 8, of the Constitution of North Carolina which provides that the "General Assembly shall maintain a public system of higher education, comprising The University of North Carolina and such other institutions of higher education as the General Assembly may deem wise."

By 1969, The University of North Carolina included six constituent institutions, governed by a single Board of Trustees. This multi-campus University had its beginnings in legislation enacted in 1931 that defined The University of North Carolina to include The University of North Carolina at Chapel Hill, North Carolina State University at Raleigh, and The University of North Carolina at Greensboro. In the 1960's three additional campuses were added: The University

of North Carolina at Charlotte, The University of North Carolina at Asheville, and The University of North Carolina at Wilmington.

Beginning in 1877, the General Assembly of North Carolina established or acquired ten additional separately governed state-supported senior institutions of higher education. They are: Appalachian State University, East Carolina University, Elizabeth City State University, Fayetteville State University, North Carolina Agricultural and Technical State University, North Carolina Central University, North Carolina School of the Arts, Pembroke State University, Western Carolina University, and Winston-Salem State University. Then, in 1971, the General Assembly redefined The University of North Carolina, and under the terms of that legislation all sixteen public senior institutions became constituent institutions of The University of North Carolina.

The constitutionally authorized Board of Trustees of the six-campus University of North Carolina was designated the Board of Governors and this body is by law The University of North Carolina. The Board of Governors consists of thirty-two members elected by the General Assembly and it is charged with "the general determination, control, supervision, management, and governance of all affairs of the constituent institutions." The chief executive officer of The University is the President.

Each constituent institution of The University has its own faculty and student body. The chief administrative officer of each institution is the chancellor, and the chancellors are responsible to the President.

Each constituent institution also has a board of trustees composed of thirteen members: eight elected by the Board of Governors, four appointed by the Governor, and the elected president of the student body ex officio. (The School of the Arts has two additional ex officio trustees.) The principal powers of these institutional boards are exercised under a delegation of authority from the Board of Governors.

ORGANIZATION OF THE UNIVERSITY

Board of Governors The University of North Carolina

John R. Jordan, Jr., Chairman Mrs. Hugh Morton, Vice Chairman Louis T. Randolph, Secretary

Class of 1983

Irwin Belk
Wayne A. Corpening
Daniel C. Gunter, Jr.
Mrs. Howard Holderness
John R. Jordan, Jr.
J. Aaron Prevost
Louis T. Randolph
Harley F. Shuford, Jr.

Class of 1985

Furman P. Bodenheimer Laurence A. Cobb John Edwin Davenport Charles Z. Flack, Jr. James E. Holmes Reginald F. McCoy Mrs. John F. McNair, III Maceo A. Sloan

Class of 1987

B. Irvin Boyle
William A. Dees, Jr.
Jacob H. Froelich, Jr.
James E. Holshouser, Jr.
William A. Johnson
Robert L. Jones
E. B. Turner
(1 Vacancy)

Class of 1989

Mrs. Geneva J. Bowe Philip G. Carson Walter R. Davis R. Phillip Haire Mrs. Hugh Morton Asa T. Spaulding, Jr. David J. Whichard, II William K. Woltz

OFFICERS OF ADMINISTRATION THE UNIVERSITY OF NORTH CAROLINA (Sixteen Constituent Institutions)

WILLIAM C. FRIDAY, B.S., LL.B., LL.D., D.C.L. - President ROY CARROLL, B.A., M.A., Ph.D. - Vice President-Planning

RAYMOND H. DAWSON, B.A., M.A., Ph.D. - Vice President-Academic Affairs

EDGAR WALTON JONES, B.S. M.S., Ph.D. - Vice President-Research and Public Service

L. FELIX JOYNER, A.B. - Vice President-Finance

CLEON F. THOMPSON, JR., B.S., M.S., Ph.D. - Vice President-Student Services and Special Programs

JOHN P. KENNEDY, JR., S.B., B.A., M.A., J.D. - Secretary of the University GEORGE E. BAIR, B.A., M.A., Ph.D. - Assistant to the President for University Telecommunications

HUGH S. BUCHANAN, JR., B.A. - Associate Vice President-Finance

JOHN F. COREY, B.S., M.A., Ed.D. - Associate Vice President-Student Services and Special Programs

JOHN W. DUNLOP, B.A. - Director, The University of North Carolina Center for Public Television

KENNIS R. GROGAN, B.S., M.B.A. - Associate Vice President-Finance JAMES L. JENKINS, JR., A.B. - Assistant to the President

ARNOLD K. KING, A.B., A.M., Ph.D. - Assistant to the President

R. D. McMILLAN, JR., B.S. - Assistant to the President for Governmental Affairs

RICHARD H. ROBINSON, JR., A.B., LL.B. - Assistant to the President DONALD J. STEDMAN, B.A., M.A., Ph.D. - Associate Vice President-Academic Affairs

ROBERT W. WILLIAMS, JR., A.B., M.A., Ph.D. - Associate Vice President-Academic Affairs

GOVERNANCE OF NORTH CAROLINA AGRICULTURAL AND TECHNICAL STATE UNIVERSITY

North Carolina Agricultural and Technical State University is a constituent institution of The University of North Carolina. It functions under the jurisdiction of a thirty-two member Board of Governors of The University of North Carolina elected by the General Assembly of North Carolina. Policies of the Board of Governors are administered by the President of the University and his staff. They constitute the General Administration and are located in Chapel Hill.

The Board of Trustees of North Carolina Agricultural and Technical State University consists of thirteen members. Eight members are appointed by the Board of Governors, four are appointed by the Governor of the State, and the President of the Student Government Association serves as an ex officio member. The Board of Trustees received its authority by delegation from the Board of Governors.

The Chancellor is the chief administrative officer of the University.

The University Senate and The University Council are the principal policy recommending bodies of the institution.

NORTH CAROLINA AGRICULTURAL AND TECHNICAL STATE UNIVERSITY BOARD OF TRUSTEES

	OTELO
Carson Bain	
Marshall B. Bass	Winston-Salem
Lacy H. Caple	
Elizabeth W. Cone	
C. C. Griffin	
William L. Hemphill	
Jesse Jackson	
Stephen Kirk	
Robert A. Kraay	
Paul Locklear	
McArthur Newell	
Mack Pearsall	Pockey Mount
Otis E. Tillman	
OFFICERS OF ADMI	NISTRATION
Edward B. Fort, B.S., M.S., Ed. D	Chancellor
Nathan F. Simms, Jr., B.S., M.S., Ph.D.	Vice Chancellor for Academic Affairs
Charles C. McIntyre, B.S., M.B.A.	Vice Chancellor for
Charles C. McIntyle, D.S., M.D.M.	Fiscal Affairs
I E Maralall B.C. M.C. El D.	
Jesse E. Marshall, B.S., M.S., Ed.D.	
Albert E. Smith, B.S., M.S., Ph.D V	
Dorothy J. Alston, B.S., M.A., Ed.D	University Relations
Dorothy J. Alston, B.S., M.A., Ed.D	Special Assistant to the
Howard Robinson, B.S., M.S., Ph.D.	hancellor for Administrative Affairs
Howard Robinson, B.S., M.S., Ph.D	Director of Research Administration
, , , , ,	
Academic At	
Academic Af	fairs
Academic At Nathan F. Simms, Jr., B.S., M.S., Ph.D	fairs . Vice Chancellor for Academic Affairs
Academic Af	fairs . Vice Chancellor for Academic Affairs Assistant Vice Chancellor for
Nathan F. Simms, Jr., B.S., M.S., Ph.D Willie T. Ellis, B.S., M.S., Ph.D	fairs . Vice Chancellor for Academic Affairs Assistant Vice Chancellor for Academic Affairs
Academic At Nathan F. Simms, Jr., B.S., M.S., Ph.D	fairs . Vice Chancellor for Academic Affairs Assistant Vice Chancellor for Academic Affairs Assistant Vice Chancellor for
Nathan F. Simms, Jr., B.S., M.S., Ph.D Willie T. Ellis, B.S., M.S., Ph.D Ronald O. Smith, B.A., M.A., Ph.D	fairs Vice Chancellor for Academic Affairs Assistant Vice Chancellor for Academic Affairs Assistant Vice Chancellor for Academic Affairs Academic Affairs
Nathan F. Simms, Jr., B.S., M.S., Ph.D Willie T. Ellis, B.S., M.S., Ph.D Ronald O. Smith, B.A., M.A., Ph.D Suresh Chandra, B.Sc., M.Ch.E., Ph.D	. Vice Chancellor for Academic Affairs Assistant Vice Chancellor for Academic Affairs Assistant Vice Chancellor for Academic Affairs Dean, School of Engineering
Nathan F. Simms, Jr., B.S., M.S., Ph.D Willie T. Ellis, B.S., M.S., Ph.D Ronald O. Smith, B.A., M.A., Ph.D	Vice Chancellor for Academic Affairs Assistant Vice Chancellor for Academic Affairs Assistant Vice Chancellor for Academic Affairs Dean, School of Engineering Dean, School of Business
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Academic At Nathan F. Simms, Jr., B.S., M.S., Ph.D Willie T. Ellis, B.S., M.S., Ph.D Ronald O. Smith, B.A., M.A., Ph.D Suresh Chandra, B.Sc., M.Ch.E., Ph.D Quiester Craig, B.A., M.B.A., Ph.D William DeLauder, B.S., Ph.D S. Joseph Shaw, B.S., M.A., Ph.D	. Vice Chancellor for Academic Affairs Assistant Vice Chancellor for Academic Affairs Assistant Vice Chancellor for Academic Affairs Dean, School of Engineering Dean, School of Business and Economics . Dean, School of Arts and Sciences Dean, School of Education
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Nathan F. Simms, Jr., B.S., M.S., Ph.D Willie T. Ellis, B.S., M.S., Ph.D Ronald O. Smith, B.A., M.A., Ph.D Suresh Chandra, B.Sc., M.Ch.E., Ph.D Quiester Craig, B.A., M.B.A., Ph.D William DeLauder, B.S., Ph.D S. Joseph Shaw, B.S., M.A., Ph.D Albert W. Spruill, B.S., M.S., Ed.D B.C. Webb, B.S., M.S., Ph.D Marietta Raines, B.S., M.A.	. Vice Chancellor for Academic Affairs Assistant Vice Chancellor for Academic Affairs Assistant Vice Chancellor for Academic Affairs Dean, School of Engineering Dean, School of Business and Economics Dean, School of Arts and Sciences Dean, School of Education Dean, The Graduate School Dean, School of Agriculture Acting Dean, School of Nursing
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Nathan F. Simms, Jr., B.S., M.S., Ph.D. Willie T. Ellis, B.S., M.S., Ph.D. Ronald O. Smith, B.A., M.A., Ph.D. Suresh Chandra, B.Sc., M.Ch.E., Ph.D. Quiester Craig, B.A., M.B.A., Ph.D. William DeLauder, B.S., Ph.D. S. Joseph Shaw, B.S., M.A., Ph.D. Albert W. Spruill, B.S., M.S., Ed.D. B.C. Webb, B.S., M.S., Ph.D. Marietta Raines, B.S., M.A. Alene Young, A.B., M.L.S., Rudolph Artis, B.S., M.S., Ed.D.	Vice Chancellor for Academic Affairs Assistant Vice Chancellor for Academic Affairs Assistant Vice Chancellor for Academic Affairs Dean, School of Engineering Dean, School of Business and Economics Dean, School of Arts and Sciences Dean, School of Engineering Dean, School of Agriculture Acting Dean, School of Agriculture Acting Dean, School of Nursing Acting Director of Library Services Director of Registration and Records
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Nathan F. Simms, Jr., B.S., M.S., Ph.D Willie T. Ellis, B.S., M.S., Ph.D Ronald O. Smith, B.A., M.A., Ph.D Suresh Chandra, B.Sc., M.Ch.E., Ph.D Quiester Craig, B.A., M.B.A., Ph.D William DeLauder, B.S., Ph.D S. Joseph Shaw, B.S., M.A., Ph.D Albert W. Spruill, B.S., M.S., Ed.D B.C. Webb, B.S., M.S., Ph.D Marietta Raines, B.S., M.A Alene Young, A.B., M.L.S., Rudolph Artis, B.S., M.S., Ed.D Clenton A. Blount, Jr., B.S., M.A Lt. Colonel Monroe J. Fuller, B.S., M.A.	Vice Chancellor for Academic Affairs Assistant Vice Chancellor for Academic Affairs Assistant Vice Chancellor for Academic Affairs Dean, School of Engineering Dean, School of Business and Economics Dean, School of Arts and Sciences Dean, School of Education Dean, The Graduate School Dean, School of Agriculture Acting Dean, School of Nursing Acting Director of Library Services Director of Registration and Records Director of Admissions Professor of Aerospace Studies
Nathan F. Simms, Jr., B.S., M.S., Ph.D Willie T. Ellis, B.S., M.S., Ph.D Ronald O. Smith, B.A., M.A., Ph.D Suresh Chandra, B.Sc., M.Ch.E., Ph.D Quiester Craig, B.A., M.B.A., Ph.D William DeLauder, B.S., Ph.D S. Joseph Shaw, B.S., M.A., Ph.D Albert W. Spruill, B.S., M.S., Ed.D B.C. Webb, B.S., M.S., Ph.D Marietta Raines, B.S., M.A Alene Young, A.B., M.L.S., Rudolph Artis, B.S., M.S., Ed.D Clenton A. Blount, Jr., B.S., M.A Lt. Colonel Monroe J. Fuller, B.S., M.A. Lt. Colonel Charles H. Jackson, B.S	Vice Chancellor for Academic Affairs
Nathan F. Simms, Jr., B.S., M.S., Ph.D Willie T. Ellis, B.S., M.S., Ph.D Ronald O. Smith, B.A., M.A., Ph.D Suresh Chandra, B.Sc., M.Ch.E., Ph.D Quiester Craig, B.A., M.B.A., Ph.D William DeLauder, B.S., Ph.D S. Joseph Shaw, B.S., M.A., Ph.D Albert W. Spruill, B.S., M.S., Ed.D B.C. Webb, B.S., M.S., Ph.D Marietta Raines, B.S., M.A Alene Young, A.B., M.L.S., Rudolph Artis, B.S., M.S., Ed.D Clenton A. Blount, Jr., B.S., M.A Lt. Colonel Monroe J. Fuller, B.S., M.A.	Vice Chancellor for Academic Affairs

Student Affairs

Jesse E. Marshall, B.S., M.S., Ed.D Vice Chancellor for Student Affairs Sullivan Welborne, B.S., M.S., Ed.D Dean of Student Affairs for Service William Goode, B.S Dean of Student Affairs for Student Management and Human Relations		
Lucille Piggott, B.S., M.Ed., Ed.D Dean of Student Affairs for Student Life Robert L. Wilson, A.B., M.S., Ph.D Director of Counseling Services Leon Warren, B.S., M.S Director of Career Planning and Placement		
Roger McKee, B.S., M.S. Director of Memorial Union Marilynn Burnette, B.S., M.S. Director of International and Minority Student Affairs		
Norma Pennix, B.S., M.S Director of Veterans and Handicapped		
Prabhakar Pendse, M.D., F.A.C.S. Director of Health Services Dorothy Bailey, B.S., M.S. Director of Student Activities		
Fiscal Affairs		
Charles C. McIntyre, B.S., M.B.A. Robert O. Kelley, B.S., M.P.A. Paula Jeffries, B.S. Clara Pinkney, B.S., M.S. Director of Personnel Maxine D. Davis, B.S., M.Ed. Nathaniel Hall, B.S. Gerard Gray, B.S., M.S. Joirector of Purchasing Nathaniel Hall, B.S. Director of Physical Plant Jagjit Gulati, B.A., M.S. Alberta Dalton, B.S., M.S. Director of Student Financial Aid Claybon Harris, B.S., C.P.A. Director of Accounting Price of Accounting Director of Personnel Maxine D. Director of Purchasing Nathaniel Hall, B.S. Director of Computer Services Alberta Dalton, B.S., M.S. Director of Student Financial Aid Claybon Harris, B.S., C.P.A. Director of Auxiliary Services		
Development and University Relations		
Albert E. Smith, B.S., M.S., Ph.D Vice Chancellor for Development and University Relations Richard Moore, B.S., M.S. Ed.D Director of Information Services Joseph D. Williams, B.S., M.S Director of Alumni Affairs Shirley T. Frye, B.S., M.S Assistant Vice Chancellor for Development		
and University Relations Joseph Faust, A.B. Director of Sports Information Harold L. Lanier, B.S., M.S. Director of Cooperation Education Bert C. Piggott, B.S., M.S., Ed.D. Director of Athletics		
Officers Emeriti		
Lewis C. Dowdy, A.B., M.A., Ed.D., Litt. D		

LOCATION

North Carolina Agricultural and Technical State University is located in the City of Greensboro, North Carolina. This city is 300 miles south of Washington, D.C. and 349 miles north of Atlanta. It is readily accessible by air, bus and automobile.

The city offers a variety of cultural activities and recreational facilities. These include athletic events, concerts, bowling, boating, fishing, tennis, golf and

other popular forms of recreation.

The University is located near major shopping centers, churches, theaters and medical facilities. The heavy concentration of manufacturing plants, service industries, governmental agencies and shopping centers provide an opportunity for many students who desire part-time employment while attending the University.

THE PHYSICAL PLANT

The main campus of the University is located on land holdings in excess of 181 acres. The University farm located east of the Greensboro City limits includes approximately 600 acres of land and modern farm buildings. The approximate value of the physical plant is \$36 million.

University Buildings

Dudley Memorial Building (Administration)
F. D. Bluford Library
Richard B. Harrison Auditorium
Charles Moore Gymnasium
Coltrane Hall (Headquarters for N.C. Agricultural Extension Service)
The Memorial Union
The Oaks (President's Residence)
The Ellis F. Corbett Center
The Joseph Bryan House

Class Room and Laboratory Buildings

Carver Hall	School of Agriculture
Cherry Hall	School of Engineering
	School of Arts and Sciences
	School of Graduate Studies
Hodgin Hall	School of Education
Noble Hall	School of Nursing
Garret House	
Hines Hall	
	Agricultural Technology
	Dairy Manufacturing
Reid Greenhouses	
Graham Hall	. School of Engineering and Computer Science Center
	Music-Art
Price Hall	Division of Industrial Education & Technology
Price Hall Annex	Child Development Laboratory
	ROTC Headquarters
	Biology

Merrick Hall School of Business and Economics
J. M. Marteena Hall Physics, Mathematics & Physical Science
Reed African Heritage Center Museum
Social Science Building

Residence Halls

Curtis Hall (148)
Gibbs Hall (200)
High Rise Dormitory (East) (194)
High Rise Dormitory (West) (208)
Holland Hall (144)
Morrison Hall (94)
Vanstory Hall (200)
Cooper Hall (400)
Scott Hall (1010)
Senior Hall (200)
Zoe P. Barbee Hall
Alex Haley Hall
Holt Hall

Service Buildings

Murphy Hall Student Services
Brown Hall Cafeteria, Post Office, Student Financial Aid Office
Williams Hall Cafeteria
Sebastian Infirmary
T. E. Neal Heating Plant
Laundry-Dry Cleaning Plant
Clyde Dehuguley Physical Plant Building
Garrett House

Other Facilities

Athletic field—including three practice fields for football, quarter mile track, baseball diamond and field house.

SCHOOLS AND DIVISIONS OF NORTH CAROLINA AGRICULTURAL AND TECHNICAL STATE UNIVERSITY

North Carolina Agricultural and Technical State University includes the following schools and divisions:

The School of Agriculture
The School of Arts and Sciences
The School of Business and Economics
The School of Education
The School of Engineering
The School of Nursing
The Graduate School
The Summer School
The Division of Continuing Education

ACCREDITATION AND INSTITUTIONAL MEMBERSHIPS

North Carolina Agricultural & Technical State University is a fully accredited member of the SOUTHERN ASSOCIATION OF COLLEGES AND SCHOOLS.

The Department of Industrial Technology is accredited by the National Association of Industrial Technology

The Media Program is accredited by the Association of Educational Communications and Technology.

The School of Engineering is accredited by the Accreditation Board for Engineering and Technology, Inc. (ABET).

The School of Nursing is accredited by the National League for Nursing, Department of Baccalaureate and Higher Degree Programs

The Teacher Education Programs are accredited by the National Council for Accreditation of Teacher Education

The Department of Chemistry is accredited by the American Chemical Society

The School of Business and Economics is accredited by the American Assembly of Collegiate Schools of Business

The Department of Sociology and Social Service is accredited by the Council on Social Work Education

The university holds institutional membership in the following associations:

American Association of Colleges for Teacher Education

American Association of Collegiate Registrars and Admission Officers

National Association of State Universities and Land Grant Colleges

American Association of Colleges of Nursing

American College Public Relations Association
American Council on Education

American Public Welfare Association

American Public Welfare Association
American Library Association

Association of American Colleges

Association of Collegiate Deans and Registrars

Association of Collegiate Schools of Architecture

College Language Association

National Association of Business Teacher Education

American Personnel and Guidance Association

National Association of Student Personnel Administrators

Association of College Unions International

National Association of College and University Food Service

National Commission on Accrediting

National Institutional Teacher Placement Association

National League for Nursing, Council of Member Agencies, Department of Baccalaureate and Higher Degree Programs

North Carolina Association of Colleges and Universities

North Carolina League for Nursing

North Carolina Library Association

Southeastern Library Association

Southern Regional Education Board Council on Collegiate Education for Nursing

Graduates of the University are eligible for membership in the American Association of University Women

N. C. A & T. Bulve Greensbore, N. G. 27411

DEGREE PROGRAMS

Students who complete one or more of the courses of study listed below will be awarded the degree indicated

Undergraduate Degrees

Accounting-B.S.

Administrative Services—B.S.

Agricultural Business-B.S.

Agricultural Education—B.S.

Agricultural Economics—B.S.

Agricultural Engineering-B.S.

Agricultural Science—B.S.

Agricultural Technology—B.S.

Art, Design-B.A.

Art Education—B.S.

Art, Painting—B.A.

Architectural Engineering—B.S.

Biology-B.S.

Biology, Secondary-B.S.

Business Administration—B.S.

Business Education, Secondary—B.S.

Chemistry—B.S.

Chemistry, Secondary Education—B.S.

Child Development—B.S.

Clothing and Textiles—B.S.

*Computer and Information Sciences—B.S.

Driver and Safety Education—B.S.

Early Childhood Education (K-3)—B.S.

Economics—B.S.

Electrical Engineering—B.S.

Engineering Mathematics—B.S.

Engineering Physics—B.S.

English—B.A.

English, Secondary Education—B.S.

Food Administration—B.S.

Food and Nutrition (Including Dietetics)—B.S.

Food Science—B.S.

French—B.A.

French, Secondary Education—B.S.

Health and Physical Education-B.S.

History—B.A.

History, Secondary Education—B.S.

Home Economics Education—B.S.

Industrial Arts Education—B.S.

Industrial Engineering—B.S.

Industrial Technology—B.S.

*Laboratory Animal Science—B.S.

Landscape Architecture—B.S.

Mathematics—B.S.

Mathematics, Secondary Education—B.S.

Mechanical Engineering—B.S.

Music—B.A.

Music Education—B.S.

^{*}See Bulletin insert for curriculum guide and course descriptions.

Nursing—B.S.

Physics—B.S.

Physics, Secondary Education—B.S.

Political Science—B.A.

Professional Theatre—B.A.

Psychology—B. A.

Recreation Administration—B.S.

Social Science, Education—B.S.

Sociology-B.A.

Social Services—B.S.

Speech and Theatre-B.A.

Transportation—B.S.

Vocational—Industrial Education—B.S.

*Graduate Degrees

Adult Education-M.S.

Afro-American Literature-M.A.

Agricultural Economics—M.S.

Agricultural Education-M.S.

Art Education, Secondary—M.S.

Educational Media—M.S.

Biology-M.S.

Biology, Secondary Education—M.S.

Chemistry—M.S.

Chemistry, Secondary Education-M.S.

Driver and Safety Education-M.S.

Education-M.S.

Educational Administration and

Supervision—M.S.

Electrical Engineering—M.S.

Elementary Education, Early Childhood—M.S.

Elementary Education, General—M.S.

Engineering—M.S.

English and Afro American

Literature-M.A.

English, Secondary Education—M.S.

Food and Nutrition—M.S.

French-M.S.

Health and Physical Education-M.S.

History, Secondary Education—M.S.

Industrial Arts Education—M.S.

Industrial Engineering—M.S.

Intermediate Education (4-7)—M.S.

Mathematics, Secondary Education-M.S.

Physical Education—M.S.

Reading Education—M.S.

Social Science, Secondary Education—M.S.

Student Personnel (Counseling Education; Guidance)—M.S.

Vocational—Industrial Education—M.S.

^{*} See Graduate School Bulletin for complete instructions

F. D. BLUFORD LIBRARY

The F. D. Bluford Library is a four-story facility located near central campus. The current holdings when this publication went to press include approximately 274,000 volumes and a total of 1,448 serial subscriptions (newspapers, periodicals and indexes). Government publications and the Teacher Education Materials Center are two areas representing superior collections. The library also maintains an excellent collection of films and other microforms. Limited meeting facilities are provided for faculty and student use.

Library hours are as follows:

Monday-Thursday	8:00 a.m12:00 M
Friday	8:00 a.m8:00 p.m.
Saturday	9:00 a.m5:00 p.m.
Sunday	2:00 p.m10:00 p.m.

THE H. CLINTON TAYLOR ART GALLERY

The H. Clinton Taylor Art Gallery is located on the ground floor of the F. D. Bluford Library. The Gallery is unique in its function of presenting and circulating exhibitions of diverse culture and ethnic groups represented by the university community. These shows provide significant experiences in the visual arts for the University, the community, and the region.

The aims and objectives of the Gallery Program are:

- 1. To augment the Humanities program by providing students with the visual image of artistic works
- To contribute to the culture of the campus and community by mounting special exhibitions featuring the work of minority painters, sculptors and craftsmen
- To bring to the attention of students the best talents of Afro-Americans and other ethnic artists thereby presenting him a balanced program related to the arts
- 4. To provide a repository of information on the Afro-American artists, sculptors and craftsmen
- 5. To start actively collecting the works of Black artists and other minorities to build a collection for the University
- 6. To develop this collection to the point that it can be loaned upon request to arid areas.

THE AFRICAN HERITAGE CENTER

The African Heritage Center was established as a unit of the University in 1967 to provide a special focus on education and research on the artistic, cultural, historical, and related resources of the continent of Africa and Afro-Americans. It is located on the main campus in a building on Nocho Street.

The objectives of the African Heritage Center are:

- To afford students and other citizens of the surrounding community an
 opportunity to learn more about cultural diversity and to understand the
 ethnic backgrounds and cultural heritage of various ethnic groups of the
 nation and world.
- 2. To develop and disseminate materials of a multi-ethnic nature with special emphasis on Africa, Afro-Americans, and Native Americans.
- To cooperate with and encourage those community groups that have a special interest in transcultural emphasis in the promoting, developing, and producing programs related to the history and/or traditions of different ethnic groups.

The Center is basically a museum that includes a growing collection which has now reached over 2,500 items from some thirty-seven African countries, the United States, and several other countries. Many of the items on display (pots, baskets, dishes, jewelry, weapons, and fabrics) are of a functional nature, reflecting traditional and contemporary life of various ethnic cultures. Prominent parts of the museum collection include masks, icons, bronze, ivory, and wood carvings which reflect art in the regional and cultural traditions of the people who produced them.

One new feature of the Center is the acquisition of several hand-craft items created by Afro-Americans, dating back to the eary 1800's. An example of this is a bureau, created by Thomas Day, a skilled craftsman of Milton, North Carolina. He created his own designs and taught his apprentices the art of

cabinet making.

Throughout the year, the Center has on display its permanent collection as well as a number of special exhibits of sculpture, paintings, graphics, and other media. In addition to the visits of individuals and groups, the Center's program also includes off-campus exhibits and other presentations. The Center is widely used as a unique resource for individuals and educational institutions of the region.

THE AUDIOVISUAL CENTER

The Audiovisual Center is a resource pool of materials, services and facilities. It purports to assist in the improvement of instruction by providing means of facilitating the communication of ideas, attitudes and facts in the teaching-learning process. The Center is located on the first floor (Room 101) of Crosby Communications Building. The Audiovisual Center provides the following services for the campus:

- -Information on Instructional Materials and Equipment from other Sources
- -Projectionist for Audiovisual Showings
- -Classroom and Preview Showings
- -Assistance in the selection and preparation of Instructional Materials
- -Consultation on problems relating to the location, selection, utilization, design and evaluation of instructional materials and equipment

CLOSED CIRCUIT TELEVISION

An important adjunct to the educational program of the University is the newly activated television facility. This closed-circuit installation is housed in the Crosby Communications Building. Programs may be originated in the studio, in six classrooms and in the Little Theater. Programs may be received from the studio or from "off the air" in 23 classrooms or seminar rooms. Assistance in designing and producing instructional programs is provided to members of the faculty and students are instructed in television production in the studio.

THE CAMPUS RADIO STATION

The WNAA campus radio station is housed on the second floor of Price Hall. The frequency modulated (FM), non-commercial, educational broadcast facility is licensed by the Federal Communications Commission in Washington, D.C. It is located on channel 213 and operates at the assigned frequency of 90.5 megahertz with an effective radiated power of ten (10) watts.

The station provides alternative programming in the forms of cultural, edu-

cational, and public affairs features.

Program development is based on community interests and needs as ascertained from community surveys, pools and questionnaires conducted by

WNAA personnel.

Weekly programming consists of approximately thirty-seven hours of locally produced community oriented material of a non-musical variety. News segments are augmented by information derived from both the Associated Press and the Black Audio Network.

THE COMPUTER CENTER

The Computer Center is located in Graham Hall. The University's faculty and staff has access to the Computer Center for the development of administrative systems, assistance in research and tutorial services.

The Computer Center provides two distinct functions: administrative data processing which entails systems design, system development, programming and implementation; and, academic data processing which acts as a liaison between the educational community and supports educational software systems.

The Center maintains an up-to-date library with full documentation of all available software packages and computer instructional materials available to

faculty and staff.

Available to the University community is a computer laboratory equipped with on-line terminal devices providing instant response to the users in program development, CAI lessons and database queries. Also contained in this area are keypunch machines, an open shop job entry card reader to the DEC-10 and an input and output station for job submission and job output. Students should consult their instructors for laboratory availability.

The computer system in use at the Center is a DECsystem-10, 256,000 word memory, 600,000,000 character disk, 3 tape drives, 1 high-speed line printer, and 1 high-speed card reader. The TOPS-10 operating system supports ALGOL, BASIC, COBOL, FORTRAN, MACRO and APL, 1 calcomp plotter, SYSTEM 1022 Data Base Management System 64 terminal connection porters

and terminals located in many offices and departments on campus.

The Computer Center maintains a staff with expertise in the following areas: scientific, mathematical, operations, data entry, program development and systems analysis and design. Consultation services are available upon request.

READING CENTER

The University Reading Center is located in Crosby Hall. It was established to provide assistance for students who need to improve their reading skill. English 102, Developmental Reading, is offered through the center to help students improve their reading efficiency and strengthen their communicative skills. Diagnostic and remedial services are available to students also. In addition to these services the center serves as a laboratory for teacher preparation.

LANGUAGE LABORATORY

An electronic, dial-access laboratory has been provided for students enrolled in Foreign Language, Speech, and Reading Courses. This facility provides positions from which students may dial prepared lessons, exercises or lectures. In addition, certain positions provide the opportunity to control remote tape recorders on which to record their own responses. Certain rooms are equipped with over-head speakers accessing both tape drives and record players. Although primarily designed for the departments mentioned, the facility is available to other departments of the University.

THE LEARNING ASSISTANCE CENTER

The Learning Assistance Center is organized to provide special services to students who need assistance in strengthening their reading communication and computational skills. The objective of this program is to help each enrollee to develop a foundation for completing his or her college career.

The program provides special classes in English, Reading and Mathematics. It offers tutorial services and helps the enrollees to develop study skills.

COOPERATIVE EDUCATION

Cooperative Education is a carefully organized and supervised program of "Experiential Learning" in which the participating student enriches his or her education by alternating periods of classroom study with periods of work related to his or her academic major. It is OPTIONAL on the part of the student and is COUNSELING-CENTERED. The objective of the program is to enrich the Total Educational Experience of students involved.

GREENSBORO REGIONAL CONSORTIUM

The Greensboro Regional Consortium is an organization comprised of North Carolina Agricultural and Technical State University, The University of North Carolina at Greensboro, High Point College, Greensboro College, Bennett College and Guilford College. The organization promotes interinstitutional cooperation and cooperative educational activites among the six institutions. Agreements provide the opportunity for any student to enroll at another institution for a course or courses not offered on one's home campus.

THE CENTER FOR MANPOWER RESEARCH AND TRAINING

Originally funded by a grant from the U.S. Department of Labor, Manpower Administration, The Center for Manpower Research and Training offers to students and faculty an opportunity for interdisciplinary training and research in the areas of manpower planning to solve problems of unemployment, underemployment and discrimination. The participating departments include business administration, economics, industrial education, industrial technology, psychology, guidance, and sociology and social service.

TRANSPORTATION INSTITUTE

The Transportation Institute draws faculty, staff members and students from a number of different departments to create an interdisciplinary unit that conducts training and research programs in the field of transportation. It also serves as a resource for planners, social scientists, public officials, and community groups in helping them solve transportation problems.

In the Training Program, students choose from a coordinated series of courses offered by the Departments of Architectural Engineering, Business Education, Economics and Political Science. Students are encouraged to seek a broad background which can be tailored to meet their individual needs.

The Research Progam covers a wide range of areas, from investigating transportation needs of the poor to developing a transportation systems model. The programs are oriented towards both exploring various problem areas and providing students the opportunity to become knowledgeable in transportation analysis.

Activities of the Transportation Institute are not limited to students. The Institute is a regional center which offers seminars, workshops, and short courses designed to provide instruction in current techniques and transportation concepts. These programs are designed for individuals outside the University who have an interest in transportation.

OFFICE OF DEVELOPMENT AND UNIVERSITY RELATIONS

The Office of Development and University Relations is maintained by the University not only to assist with the overall institutional development, but also to promote its continual interest among alumni, parents, friends, foundations, corporations and other sectors of the national community. It encourages annual alumni giving, deferred giving and conducts special fund campaigns. The office embraces the following areas of operation: Alumni Affairs, Public Information, Fund Raising, Publications, Public Relations, Legislative Relations, Industrial Liaison, Sports Publicity and special educational projects.

In addition, the Office aids in conducting the affairs of the A & T University Foundation, Inc., which has been established to assist in soliciting gifts from other than state coffers for such worthy purposes as unrestricted student scholarships, specialized scholarships for students in science, engineering and fine arts, faculty improvement, faculty chairs, research programs, an endowment fund, the art gallery, historical museum and capital funds.

The Office is conveniently located in the Bryan House at 606 Salem Street.

STUDENT DEVELOPMENT SERVICES

The broad objective of the program of Student Development Services is to aid students in developing the attitudes, understandings, insights and the skills which will enable them to express themselves as socially competent persons. The program places special emphasis on campus relationships and experiences which complement formal instruction. More specifically, the program of Student Development Services is conceived as a continuing exercise of identifying and remedying the daily life problems of the student. Accordingly, very definite efforts are made:

- To help students to become better acquainted with themselves and the various problems confronting them.
- 2. To help students to develop the ability to make satisfactory choices and adjustments.
- 3. To aid students in making desirable adjustments in group relationships.
- 4. To provide cultural and social experiences which will help students to develop an appreciation for the best in their cultures.
- To promote the physical, mental, moral and spiritual development of students.

The Vice Chancellor for Student Affairs directs student development services, but other college officials, faculty and staff members are responsible for various phases of the program. These include Personnel Deans, the Director of Counseling Services, Food Services, Religious Activities, Housing, Health Services, the Placement Services, University Union, the Director of International and Minority Student Affairs, Director of Veterans and Handicapped Student Affairs, faculty advisors, other individuals and agencies. Some of these services are described as follows:

GUIDANCE AND COUNSELING SERVICES

Provision is made for counseling, testing, and guiding all students through the Counseling Service Office. It is located in 103 Murphy Hall.

The Counseling Services Office conducts a testing program for all freshmen students. The results of this program are used to assist freshmen in the planning of their educational and vocational careers. The Office conducts other testing programs that are required or desired by departments of the University, also. In addition to these duties, the Office of Counseling Services cooperates with the Director of Placement in the placement of graduates.

HEALTH SERVICES

The Health Service Center maintains a staff of doctors and nurses who are qualified to give professional attention to the health problems of students. The basic components of the health service program are as follows:

1. Medical Services:

The University maintains a Director of the Health Services. University Physicians are in attendance in the infirmary daily—morning and evening—and "on call" for any emergency situations.

2. Nursing Services:

Registered nurses, under the direction of a head nurse, are in attendance daily on a twenty-four hour basis.

3. Follow-up and Consultation Services:

Follow-up services are given, and referrals to specialists are made upon recommendation of the University Physician.

4. Physical Examinations:

a. Athletes, nursing students, advanced ROTC cadets and other special groups of students are given complete physical examinations at the Student Health Center each semester or whenever necessary.

b. All freshmen and transfer students are required to secure a complete physical examination, a blood test and a chest X-ray and send the examination reports to the Director of Health Services before they are admitted to the college. The blood test and chest X-ray reports must be secured within 60 days prior to the date of enrollment. Follow-up examinations are made at the Health Center when necessary.

FOOD SERVICES

The University provides food services for students at a reasonable cost. A snack bar is located in the Memorial Student Union Building. Students who live in the residence halls are required to eat in the cafeterias. Students who live in the city may purchase meals also.

HOUSING

The residence halls provide opportunities for personal, social, and intellectual companionship as well as experiences in group living. Each residence hall is organized and it conducts programs for the development of the student.

Housing facilities for women are provided in Cooper, Gibbs, Holland, Morrison, Vanstory and High Rise. Men are housed in Curtis, Scott and Senior Hall.

The Director of Housing provides assistance for students in locating offcampus housing.

THE MEMORIAL UNION

The Memorial Union, dedicated and opened during the Spring Semester, 1966-67, is the "Community Center", serving diverse needs. It embraces a great variety of facilities and it performs a multiplicity of functions. It is a

lounge, reading room, student organizations and activities headquarters, workshop, art gallery, theatre, music room, forum, games rooms, dance and party center, office building, outing and recreation center, cultural center, ticket bureau, bookstore, confidence headquarters, dining room and snack bar, information center, barber shop, public relations agency, refuge for meditation, guest room and meeting room. The physical proximity it provides promotes the sense of community among students, faculty, alumni and publics of the University. The Union facilitates a positive recreational and cultural mission.

STUDENT ORGANIZATIONS AND ACTIVITIES

The University provides a well-balanced program of activities for moral, spiritual, cultural and physical development of the students. Religious, cultural, social and recreational activities are sponsored by various committees, departments, and organizations of the university. Outstanding artists, lectures and dramatic productions are brought to the campus also.

A listing of student organizations, their purposes, objectives, etc., are provided in the Student Handbook.

STUDENT CONDUCT

Students enrolled at North Carolina Agricultural and Technical State University are expected to conduct themselves properly at all times. They are expected to observe standards of behavior and integrity that will reflect favorably upon themselves, their families and the university. They are expected to abide by the laws of the city, state, and nation, and by all rules and regulations of the University.

Accordingly, any student who demonstrates an unwillingness to adjust to the rules and regulations that are prescribed or that may be prescribed to govern the student body will be suspended or expelled from the institution. Furthermore, any student whose conduct or behavior is not in harmony with the ideals or purpose of the university will be suspended or expelled.

A student may forfeit the privilege of working for the University when, for

any reason, he or she is placed on probation because of misconduct.

VETERANS AFFAIRS AND SERVICES

An information center and clearinghouse services are provided for veterans and war orphans who are admitted and who plan to receive money from the Veterans Administration.

The following are listed for their information and guidance:

- 1. Report to the Veterans Office as soon as you arrive.
- 2. Bring any communication you have from the Veterans Administration.
- 3. Veterans who are enrolling for the first time should bring their separation papers with them.
- 4. Be prepared to pay all bills and expenses for the first three (3) months.
- 5. The Veterans Administration requires fourteen hours for full-time student benefits.

6. The Veterans Administration pays no money to the University for veterans training. All money is paid directly to the veteran; therefore each veteran is responsible for meeting all of his or her financial obligations.

The Office of the Director of Veterans Affairs is located in the old Barnes Building.

PLACEMENT SERVICES

The Placement Center is a centralized operation and is responsible for placement activity for all schools, divisions, and departments of the University. It provides services to all seniors and graduate students as well as other students seeking employment. The Center offers a continuing service to graduating students and alumni.

Placement services to seniors and graduate students include individual and group conferences, career counseling, arranging interviews between interested students and company representatives on campus. It also provides information to students concerning summer employment and part-time employment. There is no charge to students, alumni, or employers for this service.

The Placement Office is located in Murphy Hall.

THE OFFICE FOR INTERNATIONAL STUDENTS

The Office for International Students is maintained to help this group of students derive the maximum benefits from their experiences at North Carolina Agricultural and Technical State University. It is located in the Barnes building on East Market Street.

The Office is under the supervision of the Advisor to International Students. Its purpose is to develop a comprehensive program and service model that will enable foreign students to participate in multicultural learning experiences.

More specifically the program, services and activities of the office are designed to accomplish the following objectives:

- 1. To reduce the cultural shock experienced by the international student
- 2. To provide the experience essential for the student to make a satisfactory adjustment to a different culture
- 3. To assist the foreign student in developing attitudes, understandings, insights and professional skills that may be useful for re-entry into other countries after completing his or her studies at North Carolina Agricultural and Technical State University.

Expenses and Financial Aid

Section 3

GENERAL INFORMATION

THE UNIVERSITY RESERVES THE RIGHT TO INCREASE OR DECREASE ALL FEES AND CHARGES AS WELL AS ADD OR DELETE ITEMS OF EXPENSE WITHOUT ADVANCE NOTICE AS CIRCUMSTANCES, IN THE JUDGMENT OF THE ADMINISTRATION, MAY REQUIRE.

Boarding and Lodging fees are based on the actual number of days school is in session and do not include holidays, breaks, or any other University Vacations.

Students' property in dormitories and other University buildings is at the sole risk of the owner, and the University is not responsible for loss, theft, or damage to such property arising from any cause.

Students are required to pay for any loss or damage to University property at replacement cost due to abuse, negligence, or malicious action, in addition to

being subject to disciplinary action.

The costs of required "hardback" textbooks are included in the required fees. The cost of reference books, workbooks, supplies, and "soft-back" books are not included in the required fees. Policies and procedures governing the Book Rental System can be obtained from the University Bookstore.

Personal spending money should be sent directly to and made payable to the student in the form of money orders or certified checks. As a policy, the

University does not cash personal checks for students in any amount.

Diplomas and transcripts are withheld until the student has paid in full all fees and charges due the University. Furthermore, a student in debt to the University in any amount will not be admitted to final examinations in any course, nor will a student be permitted to register for any subsequent semester until his or her obligations are paid. If special financial arrangements have been made, failure to comply with these arrangements as stipulated will result in the student being withdrawn from the University for non-payment of required fees.

Special Notice to Veterans

Veterans attending school under the provisions of Public Law 89-358 receive a monthly subsistence allowance from the Veterans Administration. Therefore, veterans are responsible for meeting all of their required fee obligations.

Veterans attending school under the provision of Public Law 894 (Disabled Veterans) receive a monthly subsistence allowance from the Veterans Administration and also, the Veterans Administration pays directly to the school the cost of the veteran's tuition and required fees. All other fees are the responsibility of the veteran.

Veterans may contact the Veterans Affairs Office on Campus for any special consideration which may be available.

REQUIRED DEPOSITS, CHARGES AND FEES

All registration fees and charges are due and payable in full before or at the

beginning of registration for each semester. Payments made by mail must be postmarked not later than August 7 for the fall semester, and December 1 for the spring semester.

ALL PAYMENTS MUST BE MADE BY CERTIFIED CHECK, BANK DRAFT, MONEY ORDER, OR CASH. Personal Checks will not be accepted. Checks, drafts, and money order must be made payable to North Carolina A & T State University, and sent directly to:

Cashier's Office North Carolina A & T State University Greensboro, NC 27411

PLEASE DO NOT SEND CASH PAYMENTS BY MAIL!

A \$15 NON-REFUNDABLE APPLICATION FEE IS REQUIRED OF ALL NEW STUDENTS

Room Reservation Deposit

A room reservation deposit of \$50 per academic year is required of all students who plan to live on campus and is to be paid in the following manner.

- 1. All new freshmen and new transfer students shall pay by May 15 for the fall semester and November 12 for the spring semester.
- Continuing and returning students shall pay by the 1st Monday in April for the fall semester and November 12 for the spring semester.
- 3. If the student utilizes campus housing, the room reservation deposit will be applied to his/her boarding and lodging account for the spring semester.
- 4. If the student does not plan to utilize campus housing, cancellation notice must be given to the Vice Chancellor for Student Affairs according to the following schedule or the deposit is forfeited:
 - (a) On or before July 31 for the fall semester.
 - (b) On or before November 30 for the spring semester.
- 5. If housing is not available for the student, refund request will be made by the Vice Chancellor for Student Affairs on the first day of classes. All refunds will be processed one month after request.

Charge Category	Date Due	Residence St	tatus *Out-of-State
DAY STUDENT (Student Living Off Campus)	Each Semester	\$ 399.50	
BOARDING ONLY STUDENT (Student Living Off Campus but taking meals on campus)	Each Semester	\$ 787.00	\$1,681.00
BOARDING & LODGING STUDENT (Student Living On Campus NOTE: All Dormitory Students must take meals in the			
University Dining Hall)	Each Semester	\$1,186.50	\$2,080.50

REGULAR SESSION CHARGES FOR PART-TIME STUDENTS NORTH CAROLINA STUDENT RATES

No. of Hrs.	Tuition & Academic Fees	Other Required Fees	Total
1-5	\$ 47.00	\$ 43.55	\$ 90.55
6-8	93.00	126.55	219.55
9-11	140.00	213.50	353.50
12 or more	186.00	213.50	399.50

^{*}Agencies requiring special academic programming and administrative services for their sponsored foreign students will be charged a one-time special operational programming fee at the time of enrollment. The amount of such fee will be established in the contract or other agreement of the sponsoring agency.

OUT-OF-STATE STUDENT RATES

No. of Hrs.	Tuition & Academic Fees	Other Required Fees	Total
1-5	\$ 270.00	\$ 43.55	\$ 313.55
6-8	540.00	126.55	666.55
9-11	810.00	213.50	1,023.50
12 or more	1,080.00	213.50	1,293.50

(Boarding and Lodging Per Semester) - \$787.00

Incidental Fees, Deposits, and Charges:

Activity-Meal-Health Stickers and ID Card Replacement Charge	\$21.00
Application Fee (non-refundable—no credit on account)	15.00
Advance Tuition Deposit (credit applied to account)	15.00
Ambulance Service	25.00
Bowling Course Fee	8.50
Chemistry Lab. Breakage Deposit (refundable)	5.00
Graduation Diploma	10.00
Graduation Regalia Rental	11.50
Infirmary Meal Charge-Per Meal-Day Student	1.00
Linen Replacement Charge	10.00
Practice Teaching, Practicum, Internship, Each	35.00
ROTC Uniform Deposit	10.00
Special Examination Fees—\$5 to \$15 (average)	10.00
Room Deposit (credit applied to account)	50.00

AUDIT OF COURSES

Course auditing is available to any student upon payment of all applicable fees. Full-time students may audit courses without additional charges. Students auditing courses are not required to participate in class discussion, prepare assignments, or take examinations. COURSE AUDITING IS WITHOUT CREDIT.

REFUND POLICY

Refunds of tuition and related fees upon official withdrawal from the University will be made according to the following schedule:

Credit

IF WITHDRAWAL IS WITHIN THE FOLLOWING WEEKS OF OFFICIAL REGISTRATION DATE

	Percentage of
1 Week	90%
2 Weeks	80%
3 Weeks	75%
4 Weeks	60%
5 Weeks	45%
6 Weeks	35%
7 Weeks	20%
8 Weeks	15%
After 8 Weeks	None

Room and Board - Pro-Rated for remaining days of the Semester.

WITHDRAWAL FROM COURSES

In order to receive financial credit for withdrawal from courses, a student must withdraw from course(s) within the official "add" period.

The University reserves the right to increase or decrease all fees and charges, as well as add or delete items of expense without advance notice as circumstances, in the judgment of the Administration may require.

SUMMER SCHOOL CHARGES PER SEMESTER HOUR

	N.C. Student	Out-of-State Student
Tuition	\$19.00	\$45.00
Other Required Fees	8.20	8.20
Total	\$27.20	\$53.20
Boarding and Lodging - Per Week	43.75	
Linen Service - Per Week	2.00	
Total	\$45.75	
Resident Hall Laundry Fee	2.00	
	Per Stud	. (Lodg. Stud.)

DETAILS OF FEES, DEPOSITS, AND CHARGES

Required Fees—N.C. Student	Per Semester	Per Year
Tuition Other Required Fees	\$ 186.00 213.50	\$ 372.00 427.00
Total - N.C. Day Student	399.50	799.00
Boarding and Lodging Room and Board Reserve for Construction and/or	725.00	1,450.00
Renovation of Dormitories	35.00	70.00
Linen Deposit (refundable)	5.00	10.00
Residence Hall Laundry Use	5.00	10.00
Linen Rental	17.00	34.00
Total Boarding & Lodging	787.00	1,574.00
Total - N.C. Boarding & Lodging Student	1,186.50	2,373.00
Required Fees - Out-of-State Student Tuition Other Required Fees	1,080.00 213.50	2,160.00 427.00
Total - Out-of-State Student	1,293.50	2,587.00
Boarding and Lodging	787.00	1,574.00
Total - Out-of-State Boarding	\$2,080.50	\$4,161.00

STUDENT FINANCIAL AID

The University recognizes that many students do not have the financial resources to accomplish their educational objectives. Through the student financial aid program, the University makes every effort to assure that no qualified student will be denied the opportunity to attend because of a lack of funds. A student who demonstrates financial need and has the potential for success in the University may obtain assistance to meet his expenses depending upon funds available. All financial aid is awarded without regard to a student's race, religion, color, national origin, or sex.

The University provides financial aid for students from four basic sources:

grants, scholarships, loans, and employment.

The University student aid funds are administered in conjunction with a nationally established policy and philosophy of financial aid for education. The basis of this philosophy is the belief that parents are the primary and responsible resource for helping to meet educational costs and student financial aids are available for filling the gap between the student's potential resources and expenses.

The amount of the contribution expected from parents is related to consideration of a family's financial strength, net income, number of dependencies, allowable expenses and indebtedness, and assets. Procedures established by a central needs analysis system and approved by the federal government are used

in making this evaluation.

The University believes in the "packaging concept" of financial aid. Students with great need may expect assistance through a variety of sources which may include loans, employment, scholarship or grants.

Typical Sources of Financial Aid

National Direct Student Loan
Supplemental Educational Opportunity Grant
Basic Educational Opportunity Grant
College Work-Study Programs
Nursing Loan Program
Nursing Scholarship Program
State Tuition Scholarship
Presidential Scholarship
Departmental Scholarships
Minority Presence Scholarship
Donated Scholarships
Institutional Scholarship Programs
Guaranteed Student Loan

A student who wishes to be considered for financial assistance must complete the following steps:

1. Submit a Financial Aid Form to the College Scholarship Service or Family Financial Statement to American College Testing.

 Submit the Student Eligibility Report for the federal Pell Grant (Basic Educational Opportunity Grant) to the Student Financial Aid Office. (Required of undergraduate students only).

A student who completes the Financial Aid Form or Family Financial Statement will be considered for all financial assistance at the University for which he/she is eligible, including general scholarships, grants, loans, and employment.

Deadlines to have your completed application on file in the Student Financial Aid Office in order to receive consideration for assistance have been established as follows:

FALL SEMESTER OF ANY YEAR: MAY 15 SPRING SEMESTER OF ANY YEAR: OCTOBER 15 SUMMER SCHOOL OF ANY YEAR: APRIL 15

Entering Students. A student entering the University as a freshman, transfer, graduate, or former student should apply for financial aid at the same time he applies for admission. A financial aid award will not be made until a student is admitted to the University, and it is important that the admission procedure be completed as soon as possible.

Transfer and Graduate Students. A student who has previously attended another postsecondary school, college or university must submit a Financial Aid Transcript to document his financial aid status at the previous school. A separate transcript must be completed for each school previously attended.

Graduate Students. A graduate student who applies for financial aid is eligible to be considered only for loan assistance and for campus employment. Information about graduate assistantships may be obtained from the Graduate School Office.

All applicants must re-apply for financial assistance each academic year (or portion thereof) and separately for a summer session.

Information About Other Programs of Financial Aid

A student is encouraged to apply to sources outside the University for whatever assistance he may be eligible to receive. An award from an outside source must be reported to the Student Financial Aid Office so that it may be included as a part of the student's total aid. A student may be eligible for assistance from the following programs:

- North Carolina Student Incentive Grants. Grant funds are available to North Carolina residents who are full-time, undergraduate students and who have substantial financial need. The NCSIG Program is administered by the College Foundation in Item 81 of the Financial Aid Form so that a copy of the statement will be sent to the NC Student Incentive Grant Program.
- Vocational Rehabilitation. Grants may be provided to needy students who
 are physically handicapped. A North Carolina student should contact the
 Vocational Rehabilitation Division of the Department of Human Resources in Raleigh.
- North Carolina Prospective Teachers' Scholarship-Loan. The Department of Public Instruction in Raleigh administers a program of assistance to North Carolina students who plan a teaching career in the public schools of North Carolina.
- 4. North Carolina Veterans' Scholarships. The children of deceased or disabled veterans or of veterans who were listed as POW/MIA may be eligible for scholarships from the North Carolina Division of Veterans' Affairs, Raleigh.
- North Carolina Commission for the Blind. Grants may be provided to needy students who are physically handicapped. A North Carolina student should contact the North Carolina Department of Human Resources, Division of Services for the Blind in Raleigh.
- North Carolina Medical Care Commission. A student may obtain information about the program by writing to Department of Human Resources, Division of Facility Services, P.O. Box 12200, Raleigh, NC 27605.
- 7. Minority Presence Scholarship. The newest kind of financial assistance available is the Minority Presence Grant. This grant is state funded and at A. and T. is made available to white North Carolina residents.

The National Defense Student Loan Program

A & T State University participates in the National Defense Student Loan Program. This program was authorized by Public Law 85-864, the National Defense Education Act of 1958. It provides a loan fund from which undergraduates and graduate students may borrow on reasonable terms for the purpose of completing their higher education. A student must be a citizen of the United States, enrolled as a full-time or half-time undergraduate or graduate student in order to be eligible for a loan. Additional information may be obtained from the Financial Aid Officer, North Carolina A & T State University, Greensboro, NC 27411.

North Carolina Rehabilitation Corporation Student Loan Program

Loans under this program are available to needy and worthy North Carolina farm boys and girls who plan to study agriculture or home economics. The loans bear interest at the rate of four percent per annum. Application forms and additional information may be obtained from North Carolina Rural Rehabilitation Corporation, Post Office Box 2403, Raleigh, NC.



Admission Policy and Procedures

Section 4

ADMISSION POLICY

North Carolina Agricultural and Technical State University is an equal educational opportunity institution. In keeping with this policy, qualified applicants are admitted to the university without regard to race, sex, religion, creed or national origin.

Unless otherwise specified, admission to all curricula are under the jurisdiction of the Director of Admissions. Application forms may be secured from that office. The completed forms with required evidence of eligibility should be submitted to the Director of Admissions as soon as possible, but at least four weeks before the beginning of the semester in which the applicant desires to enroll.

Inquiries concerning admission should be addressed to the Director of Admissions, North Carolina A & T State University, Greensboro, North Carolina 27411.

ADMISSION-FRESHMEN

To be admitted to the University as a regular student an applicant must meet the following entrance requirements:

- 1. Be graduated or scheduled to graduate from an accredited high school. (In exceptional cases admission by special examination is possible.)
- 2. Complete sixteen (16) acceptable units of secondary school credit.
- 3. Present a satisfactory score on the scholastic aptitude test.

Unit Requirements

High School Graduates should present sixteen (16) units of secondary school credit distributed as follows:

Subject	Number of Units
English	4
*Mathematics (preferably one unit of Algebra).	2
Social Science (preferably U.S. History)	1
Natural Science	1
Electives	_8
Total	16

*Students who plan to pursue majors in the School of Business and Economics and Science must have two units of Algebra, one-half unit of Trigonometry and one-half unit of Plane Geometry.

*Students who plan to major in Engineering, Mathematics and Physics must have two units of Algebra, one unit of Plane Geometry and one-half unit of

Trigonometry.

The elective units may be selected from any other high school courses. However, students may not present more than two (2) units in activity courses, such as Music and Physical Education, and not more than four (4) units in vocational courses.

Admission—Placement Test

All freshmen are required to take placement test in mathematics, English and reading.

Students who fail to meet or show the necessary competencies in these academic areas, necessary to perform in college mathematics, English, and

reading, will be assigned to remedial courses in said areas.

When students show by objective testing that they have achieved the competencies needed to perform in regular college work, they will be removed from the remedial courses and placed in the regular college courses.

Conditional Admission

Students who present sixteen (16) acceptable entrance units but do not meet the entrance requirements in mathematics listed for their curricular must take special noncredit courses to remove these deficiencies. The removal of deficiencies must begin immediately upon enrollment in the first year of study.

ADMISSION—TRANSFER

A student who wishes to transfer from another accredited college or university must meet the following requirements:

- 1. Must have a cumulative average of "C" of above.
- 2. Transfer students who have attended an accredited college but have earned less than thirty (30) semester hours of acceptable credit or equivalent must meet all freshmen requirements. These students must have a cumulative average of "C" and they must be eligible to return to the institution last attended.

ADMISSION—NON DEGREE

Many individuals desire to take courses for valid reasons as certification, prerequisites for graduate work, and personal development. These plans may not require working toward a baccalaureate degree. Individuals who have earned a baccalaureate degree may participate in this program. Inquiries should be addressed to the Director of Continuing Education.

ADMISSION-VISITORS

A student who is enrolled in another accredited college or university may enroll at North Carolina Agricultural and Technical State University for one or more courses during a regular term. The enrollment of a visiting student must be approved by the parent institution and North Carolina A. and T. State University.

ADMISSION—GRADUATE SCHOOL

The student who has graduated from an accredited college or university will be considered for admission to the Graduate School. Graduate School admission is under the supervision of the Dean of the Graduate School, North Carolina A. & T. State University, Greensboro, North Carolina 27411.

ADMISSION—SUMMER SCHOOL

Students who are working toward a degree from North Carolina Agricultural and Technical State University must meet the entrance and other requirements of the institution.

Students who are seeking a graduate degree should apply to the Dean of the Graduate School. Students holding a degree and seeking only non-degree credit should apply to the Director of the Summer School.

ADMISSION—DIVISION OF CONTINUING EDUCATION

Admission requirements for continuing education classes are generally the same as those for comparable work in regular classes on campus. However, special students may be admitted for non-degree courses and programs. Inquiries should be addressed to the Director of Continuing Education.

VETERANS AND CHILDREN OF DECEASED AND DISABLED VETERANS

Veterans and children of deceased and disabled veterans must meet regular admission requirements. Preliminary application for any educational benefits due them should be made to the nearest regional office of the Veterans Administration well in advance of the desired admission date in order that the necessary information and documents may be obtained.

FOREIGN STUDENTS

The University welcomes applications from qualified foreign students. It is felt that the presence of these students, with their varied cultural and educational backgrounds, will provide an opportunity for university students to increase their knowledge and appreciation of the cultural values of other countries.

Students from outside the United States who wish to apply for admission to the University should possess a good working knowledge of English.

Application forms may be secured from the Office of Admissions and Records.

AUDITORS

Regular students may audit a course upon the written approval of the instructor and his or her faculty advisor. They must register officially for the course and pay an audit fee to the University Cashier.

Attendance, preparation, and participation in the classroom discussion and laboratory exercises shall be at the discretion of the instructor.

Auditors are not required to take examinations and tests and they receive no credit. An auditor may not change his or her registration from audit to credit or from credit to audit after the date for adding courses shown in the University Calendar.

ADMISSION PROCEDURES

Procedure for New Students

Write to the Director of Admissions for an application blank for admission to the University. Fill it out properly and return it to the Office of Admissions.

- Arrange for the transcript of academic records from high school and/or college or university previously attended to be sent directly to the Director of Admissions.
- 3. All candidates for admission to the freshman class must take the Scholastic Aptitude Test prior to admission. This test is administered by the College Entrance Examination Board several times each year at centers throughout the United States and many foreign countries. Testing dates are regularly scheduled in November, December, January, March, May and July. Applicants should obtain Bulletins of Information, including application blanks, directly from their high school principals or guidance counselors. If these are not available in the school, applicants should write directly to the College Entrance Examination Board, Box 592, Princeton, New Jersey, for a list of testing dates and centers so that assignments may be made to the center nearest to the applicant's residence.
- 4. After the completed application form, transcripts and test results are received, they will be evaluated, and if approved, the student will receive a letter of admission and a permit to register. If the application for admission is not approved, the applicant will be notified.
- 5. Each candidate for the Freshman Class, who is scheduled to reside on campus, is expected to arrive on the campus the day preceding the date designated on the college calendar for freshman orientation. All freshmen should be present by 8:00 a.m. on the first day. The permit to register furnished beforehand by the Director of Admissions indicating the School or Department in which the applicant wishes to register must be ready for presentation to proper authorities. The dates indicated in the college calendar for freshman orientation and registration as well as those for upperclassmen must be strictly observed. Those seeking registration after the scheduled date must pay a late registration fee of \$15.00.

Procedure for Transfer Students

Applications from transfer students cannot be considered until all credentials are received from the high school and all other institutions previously attended. In addition, there must be a statement of good standing and honorable dismissal from these institutions. Previous college records must show a cumulative average of "C" or above, no course is accepted in which a grade below "C" was originally earned.

Accepted courses are recorded to the student's credit, but grade points are not calculated on the transferred courses. The grade points for a transfer student are calculated only on the courses taken here. A minimum of 50 percent of the credit hours completed must be earned at A. and T. State University in order to

be considered for honors.

Procedure for Special Students

In exceptional cases, an applicant of mature years, with special training along particular lines or of long experience in special fields of knowledge, may be admitted to the college to pursue a non-degree program or to study certain subjects as special students. Even though they do not satisfy regular entrance

requirements, such persons must submit evidence of ability to profit from such a program and must do a passing grade of work or forfeit the privilege accorded them. These persons must:

- 1. Request of the Director of Admissions an application form, fill it in and return it with:
 - (A) Records of previous educational experiences.
 - (B) Other documentary evidence of ability to pursue the courses desired.
 - (C) A statement of the applicant's objectives or purpose in pursuing studies chosen.

Filing of Credentials

Applicants should take the proper steps to see that their credentials (transcripts, etc.), are sent to the Director of Admissions as early as possible, preferably not less than thirty (30) days before the beginning of the semester in which they plan to enroll.

Re-Admission of Former Students

All students who withdraw from the University, voluntarily leave the University or are suspended, must obtain a permit to register before resuming their studies at the University.

The request for a permit must be received by the Office of Registration and Records at least thirty (30) days prior to the beginning of the semester in which the student plans to register. When requesting a permit, the student should include his or her student number, major, last term in attendance and permanent address.

Before a student is re-admitted, who voluntarily leaves or withdraws, his or her academic record is reviewed. If the student did not attain the minimum academic performance level for the number of semesters enrolled at the University, the request for readmission is subject to be denied.

Former students who have been dismissed from the University for failure to meet the scholastic eligibility requirements may appeal to the Committee on Admissions and Retention for a review of their case. The appeal should be addressed to the Committee in care of the Vice Chancellor for Academic Affairs.

These persons should not present themselves for re-enrollment until they have received a reply from the Committee. Appeals should reach the Committee at least sixty (60) days prior to the beginning of the term in which the persons expects to register.

Former students whose attendance has been interrupted by the University for disciplinary reasons must apply to the Vice Chancellor for Student Affairs for a review of their case for possible re-admission.

RESIDENCE STATUS FOR TUITION PAYMENT

Residence classification for tuition purposes are set forth by law in North Carolina as follows:

G. S. 116-143.1-(The controlling North Carolina Statute) "To qualify as a resident for tuition purposes, a person must have established legal residence (domicile) in North Carolina and maintained that legal residence for at least 12 months immediately prior to his or her classification as a resident for tuition purposes." This Statute also sets forth statutory definitions, rules, and special provisions for

determining resident status for tuition purposes. These provisions include special rules with respect to persons who are married or who are within identified subclasses of minors. Under the Statute G. S. 116-143.2 Indochina refugees may qualify for special considerations; certain other aliens may also qualify for resident tuition status.

University regulations concerning the classification of students by residence, for purposes of applicable tuition differentials, are set forth in detail in A Manual To Assist The Public Higher Education Institutions of North Carolina in the Matter of Student Residence Classification for Tuition Purposes. Each student is responsible for knowing the contents of that Manual, which is the controlling administrative statement of policy on this subject. Copies of the Manual are available on request in The Office of Admissions of A. and T. State University for purposes of student inspection.

Academic Information and Regulations

Section 5

Each student is responsible for informing himself or herself of the academic regulations and requirements set forth in this Bulletin and for revisions of same as posted on campus bulletin boards or released in other official publications of the University. Failure to meet the requirements or comply with regulations because of lack of knowledge thereof does not excuse the student from meeting the academic regulations and requirements.

A student's program of study must be approved by his or her advisor, his or her chairman or a member of the faculty in his or her major department at registration. Advisors will make every attempt to give effective guidance to students in academic matters and to refer students to those qualified to help them in other matters. However, the final responsibility for meeting all academic requirements for a selected program rests with the student.

ADVANCED PLACEMENT

Students entering the University from secondary school may obtain advanced placement and college credit on the basis of performance on the College Entrance Examination Board Advanced Placement examinations. A score of 3 or higher on any CEEB advanced placement examination will entitle the student to credit for the comparable University course as determined by the Director of Admissions in consultation with the Chairman of the appropriate department.

COURSES OF STUDY

Students should refer to the requirements of their respective departments and schools about their programs of study and confer with their advisor whenever problems arise. The student is expected to follow the program outlined as close as possible. This is very important during the first two years when he or she is satisfying basic degree requirements and prerequisites for advanced work.

PREREGISTRATION

Preregistration is a time designated each semester to allow the student and his or her advisor to review the student's records and plan a program for the next semester.

The student has an opportunity to discuss academic problems with the advisor. Preregistration helps to ensure that the courses requested on the preregistered schedule will be available to the students the following semester.

Students who are enrolled in the University during the preregistration period are expected to preregister during the period designated for this purpose.

OFFICIAL REGISTRATION

In order for a student to get credit for a course, he or she must be properly registered in that course. This means that the student must have gone through the registration procedures as outlined by the University. Further, the student must have filed with the office of Registration and Records the required class schedule cards and other basic data cards and paid all required tuition and fees.

LATE REGISTRATION

Students are expected to complete enrollment (including the payment of all required fees) on the dates listed on the University Calendar. The payment of fees is part of the registration process. No student is eligible to attend classes until the required fees have been paid.

Students who fail to complete registration during the scheduled dates will be required to pay a late registration fee of \$15.00.

COURSE LOAD

The normal course load is fifteen or sixteen (15 or 16) credit hours. A full-time undergraduate student is required to carry a minimum of twelve (12) credit hours. The maximum course load for an undergraduate student is twenty-one (21) hours. This includes physical education and non-credit courses.

DOUBLE MAJOR

Students who desire to obtain a double major, involving two departments or two schools must satisfy the major requirements for each department or school.

REPETITION OF COURSES

A student who has received a failing grade in a required course at this university must repeat and pass the course unless the dean of the School authorizes a substitute course. In cases where a student earns a "D" in his major field and is required to repeat the course the "D" is treated in the same manner as an "F" is treated. That is, the "D" is dropped in the computation of the GPA for the purpose of meeting graduation requirements in his major field.

A course which is a prerequisite to another in a sequence must be passed before the student can take the next course in the series. When a course is repeated and passed *only* the higher grade will count towards meeting the course

and degree requirements.

A student who is taking a course as an elective or out of his or her major field is not held to the prerequisite provision. However, permission of the instructor

of the course or the student's department chairman is required.

A student who has received a passing grade in any course at this university may repeat the course for credit at his or her option. Again, when this is done only the higher grade will count towards meeting course and degree requirements. Dual course credit is not allowed. This is to say that only three (3) hours of credit are allowed for a three (3) hour course regardless of the number of times it is repeated.

All grades earned by the student including "F's" are a part of his or her

official academic record and will appear on his or her transcript.

CORE REQUIREMENTS OF THE UNIVERSITY

The University Senate has approved the principle of greater flexibility in the course offerings that can be taken to satisfy the core requirements of the University. The areas in the core and the minimum semester hour requirements are as follows:

Areas	Minimum Number of Semester Hours Required	Suggested Courses
English	6	*English 100, 101
Social Science	6	History 100, 101
Natural Science	6	Biological Science 100 Physical Science 100 Botany 140 Zoology 160 Chemistry 101, 102
Humanities	6	Humanities 200, 201
Mathematics	6	Mathematics 101, 102
Health or Physical		
Education * Five year program * Required course	2	

ACADEMIC ADVISEMENT

The purpose of the Office of Academic Advisement is to help students to achieve accessible and realistic career goals based on a chosen program of study. Academic Advisement includes the following:

- Assisting advisees to plan programs of general and/or technical professional studies;
- 2. Teaching the mechanics of course selection and class schedule construction;
- 3. Evaluating course credit and/or other achievements of advisees;
- 4. Exploring fields of interest and general aptitudes leading to appropriate academic major;
- 5. Monitoring advisees' progress toward educational goals;
- 6. Identifying learning blocks and related handicaps of advisees' for academic programs;
- 7. Assisting advisees to change majors and/or schools'
- 8. Referring advisees to appropriate support services;
- Being available, easily accessible, and serving as a resource person for advisees; and,
- 10. Showing empathy, understanding, and respect for advisees.

After a student has indicated an interest in a major, the chairperson of the respective department shall assign an academic advisor to the student. To

change advisors, students should contact the chairperson of the department or the Office of Academic Advisement. The Office of Academic Advisement coordinates a cadre of dedicated and understanding faculty who provide professional and academic counsel to students. The office is located in Room 111, Hodgin Hall.

COURSE CREDIT BY EXAMINATION

Credit may be earned by examination for any undergraduate course for which a suitable examination has been adopted or prepared by the department granting the credit. The student receives the grade "P" and regular credit for the number of hours involved. However, the credit hours are excluded in computing the student's grade point average.

Credit may also be granted for the successful completion of standardized tests under the College Level Examination Program (CLEP), as approved for specific courses by university departments. There is no maximum amount of credit that a student may earn, but a student must complete a minimum of three semesters as a full-time student in residence at the University. Fees for CLEP and other standardized examinations are determined externally, rather than by the University. These credits are treated as transfer credits. Questions about the program may be addressed to the Director of Admissions, or the Director of Counseling Services.

(Grading System)

Grades are assigned and recorded as follows:

Grade	Description	Grade Points
Α	Excellent	4
В	Good	3
C	Average	2
D	Below average, but passing	1
F	Failure	0
I	Incomplete	
P	Satisfactory (credit by examination)	
S	Satisfactory (non-credit courses)	
U	Unsatisfactory (non-credit courses)	
V	Audit	
W	Withdrew	

ACADEMIC RETENTION

The normal load for an undergraduate student is sixteen credit hours per semester. The minimum load for a full-time undergraduate student is twelve credit hours per semester. The student is expected to make normal progress toward a degree.

To continue at the University, a full-time student must have the following minimum grade point average and the following minimum semester hours passed at the end of the semester indicated:

SEMESTER NUMBER	GRADE POINT AVERAGE	SEMESTER HOURS
ONE	1.10	12
TWO	1.20	24
THREE	1.30	36
FOUR	1.40	48
FIVE	1.55	60
SIX	1.70	72
SEVEN	1.80	84
EIGHT	1.90	96

A student who does not meet the above requirements will be placed on academic probation and required to remove the deficiency prior to the beginning of the next fall semester, or by the end of the student's third regular semester in residence whichever comes first. Failure to remove this deficiency during the probation semester makes the student ineligible to re-enroll the following semester. The student will be suspended for one semester. Students who are on probation at the end of the spring semester may attend summer school and work toward removing their academic deficiencies. The student who has been suspended and re-admitted is required to make a minimum grade point average of 2.0 the first semester or session or re-enrollment.

A part-time undergraduate student enrolled in a degree program must maintain the following minimum cumulative grade point average at the end of the cumulative semester hours indicated:

SEMESTER HOURS	GRADE POIN' AVERAGE	
24	1.2	
48	1.4	
72	1.7	
96	1.9	

A part-time student is defined as one who takes less than twelve hours. The part-time student who fails to maintain the minimum average is subject to the penalty prescribed for full-time students.

GRADE POINTS

Grade points are computed by multiplying the number of semester hour credits by 4 for courses in which a grade of A is earned; by 3 for a grade of B; by 2 for a grade of C; by 1 for a grade of D. No grade points are given for a grade of F.

GRADE POINT RATIO

The grade point ratio is obtained by dividing the total number of grade points earned by the total number of semester hours attempted.

COURSE NUMBERS AND CLASSIFICATION

Each course bears a distinguishing number which identifies it within the department and indicates, broadly, its level. The numbering system is as follows:

100-399, lower level courses primarily for freshmen and sophomores

400-599, upper level courses primarily for juniors and seniors

600-699, courses for undergraduate and graduate students

700-799, courses for graduate students and appropriate professional students special programs

CLASSIFICATION OF STUDENTS

Students are classified on the basis of semester hours completed, excluding remedial and deficiency courses. The following classification scale applies to all students enrolled in a four (4) year program:

CLASSIFICATION

SEMESTER HOURS COMPLETED

Freshman	0-32
Sophomore	33-63
Junior	64-95
Senior	96 or above

The following classification scale applies to students enrolled in a five year program:

CLASSIFICATION

SEMESTER HOURS COMPLETED

Freshman	0-33
Sophomore	34-67
Lower Junior	68-100
Upper Junior	101-133
Senior	134 or above

CHANGE OF GRADE

A request for a change of grade, for any reason, must be made within one year following the date the original grade was assigned by the faculty member.

CHANGES IN SCHEDULE

A change in a student's program may be made with the consent of his or her instructor and department chairman. However, if a student's schedule is changed after the designated period for adding and/or dropping courses, the consent of the School Dean is required.

The student must obtain and properly execute the Change of Schedule Form and the necessary schedule cards. These materials are obtained from the office of

Registration and Records and should be returned to that office.

CHANGING SCHOOLS

Students may transfer from one School of the University to another with the written approval and acceptance of the Deans of the Schools involved. The proper forms on which to apply for such a change are to be obtained from the Office of the Registrar and executed at least six weeks prior to the beginning of the semester in which the student plans to transfer. When such a transfer is made the student must satisfy the current academic requirements of the school and/or department to which the student transfers.

WITHDRAWAL FROM THE UNIVERSITY

A student who wishes, or is asked to leave the University at any time during the semester shall execute and file official withdrawal forms. These forms may be obtained from the Counseling and Testing Center. They should be completed and executed in quadruplicate (quintuplicate for veterans), and taken to the Cashier's Office. For failure to execute these forms, a student incurs the penalty of receiving an "F" for each course in which he or she is enrolled that semester.

Students who withdraw from the University within 15 calendar days of the beginning of the final examination period for the semester shall receive grades based upon their performance in classes up to the date of their withdrawal.

INCOMPLETES

Students are expected to complete all requirements of a particular course during the semester in which they are registered. However, if at the end of the semester, a small portion of the work remains unfinished and should be deferred because of some serious circumstances beyond the control of the student, an "I" may be submitted.

An "I" for a prolonged illness may be submitted only after the written approval of the Vice Chancellor for Student Affairs has been secured. An "I" for other causes may be submitted only with the approval of the Dean of the School.

Along with the recording of the incomplete grade, the instructor must also file with the head of the department, the student's average grade and a written description of the work which must be completed before the incomplete is removed.

(Procedure for the Removal of an Incomplete)

An incomplete grade must be removed within SIX WEEKS after the beginning of the next semester. If the student has not removed the incomplete within the time specified, the "I" becomes an "F".

SEMESTER EXAMINATIONS

A final examination will be required as a part of every course. An examination showing time and place of meeting of each course and section will be published each semester. Schedules so published will be followed without exception. Any changes in the examination schedule must be approved by the Office of Academic Affairs.

HONOR ROLL

To encourage scholarship, the University publishes an Honor Roll at the end of each semester. Regular undergraduate students whose grade point average is 3.00 or higher shall be eligible for the Honor Roll.

CLASS ATTENDANCE POLICY

Regular and punctual class attendance is the responsibility of the individual student. Moreover, the student is expected to have sufficient maturity to assume the responsibility for regular attendance and to accept the consequences of failure to attend.

The non-compulsory class attendance policy places responsibility on the student and the instructor.

Student's Responsibility

- The student is responsible for all material covered in each course for which he or she is registered. Absence from class does not relieve him or her of this responsibility.
- 2. The student is expected to be present for laboratory periods, scheduled examinations, and other activities that may require special preparation.
- 3. The student is responsible for initiating any request to make up an examination, a laboratory exercise or other work missed because of a class absence. If the instructor requests a statement concerning the reason for the absence, the student should obtain it from the appropriate officer (e.g., the University Physician, the Vice Chancellor for Student Affairs.)
- 4. The student is expected to report to each class at the beginning of the term with a validated schedule and a class admission card.

Instructor's Responsibility

- The instructor is responsible for explaining to the class any specific expectations concerning attendance at the beginning of the term.
- 2. The instructor is responsible for providing the student with a schedule of the examinations and other class requirements that will provide a basis of evaluating student performance.
- The instructor is responsible for maintaining a record of the attendance of the students in his or her class.
- The instructor is expected to warn the student when his or her academic progress is adversely affected by excessive absence from class.

GENERAL REQUIREMENTS FOR GRADUATION

A candidate for a degree from North Carolina Agricultural and Technical State University must satisfy the following minimum requirements:

- Choose a specific curriculum leading to a degree in one of the schools and complete the requirements of this curriculum.
- 2. Complete a minimum of 124 semester hours excluding deficiency courses and remedial work for the Bachelor's degree.
- Complete the core requirements of the University in English, Mathematics, Natural Science, Social Science, Humanities and Health or Physical Education for the Bachelor's degree.
- 4. Earn an average of two (2) grade points for every semester hour undertaken including hours passed or failed. After completing the number of credit hours required for graduation, if the student is deficient in grade points, he or she must take additional courses that have been approved by his or her academic dean to secure these points. The student must also obtain an average of 2.0 or more in his or her major field.

- 5. Complete a minimum of three semesters as a full-time student in residence at the University. This requirement includes the two semesters prior to the period when the student completes his or her requirements for graduation. At least one-half of the credits in the student's major field must be earned at the University. Exception to either of these provisions may be made upon the recommendation of the Chairperson of the student's major department with the approval of the School Dean.
- 6. Take the Graduate Record Examination and/or the National Teachers Examination if applicable to his or her program.
- Clear all academic conditions by the end of the semester preceding graduation.
- 8. Pay all University bills and fees.
- 9. File an application for graduation with the Office of Registration and Records three months prior to the expected date of graduation.

GRADUATION WITH HONORS

Graduation honors are awarded candidates who complete all requirements for graduation in accordance with the following stipulations: (1) Those who maintain a general average within the range of 3.00 to 3.24 will receive CUM LAUDE, (2) those who maintain a general average within the range from 3.25 to 3.49 will receive MAGNA CUM LAUDE, and (3) those who maintain a general average within the range of 3.50 to 4.00 will receive SUMMA CUM LAUDE. A minimum of 50 percent of the credit hours completed must be earned at A and T State University in order to be considered for honors. The computation for honors is based upon all courses taken at this University. Publication of honors and scholarships is made at graduation.

COMMENCEMENT PARTICIPATION

Students who complete degree requirements during the Summer Session or during the Fall Semester are invited to participate in the commencement exercises along with students who complete degree requirements during the Spring Semester.

Only students who have satisfied all requirements for their degree programs are eligible to march in the commencement exercises.

GRADUATION UNDER A GIVEN CATALOGUE

A student may expect to earn a degree in accordance with the requirements of the curriculum outlined in the catalogue in force when he or she first entered the University provided the courses are being offered. Moreover, he or she must complete these requirements within six years. On the other hand, he or she may graduate under any subsequent catalogue published while he or she is a student. If a student elects to meet the requirements of a catalogue other than the one in force at the time of his or her original entrance he or she must meet all requirements of the catalogue he or she elects.

GRADE REPORTS

As soon as they are determined at the end of each semester or summer term, a report of grades is sent to the student at his or her permanent home address.

PRIVACY OF STUDENT RECORDS

The University insures students access to their official academic records but prohibits the release of personally identifiable information, other than "directory information", from these records without their permission, except as speci-

fied by public law 93-380.

"Directory information" includes: Student's name, address, telephone number, date and place of birth, school, major, sex, marital status, dates of attendance, degree received, honors received, the institution(s) attended prior to admission to North Carolina Agricultural and Technical State University, past and present participation in officially recognized sports and activities, and physical factors.

Public law 93-380 further provides that any student may, upon written request, restrict the printing of such personal information relating to himself or herself as is usually included in campus directories. A student who desires to have "directory information" withheld must submit a written request to the Office of Registration and Records one week before the beginning of classes for

the semester or session in which he or she is enrolled.

ACCESS TO STUDENT RECORDS

- The policy for the administration of student academic records is in accordance with the Family Educational Rights and Privacy Act of 1974, as amended.
- 2. Students have the right to inspect and review any and all official records, files, and data directly related to them.
- 3. A student who believes that his or her record contains inaccurate or misleading information shall have an opportunity for a hearing to challenge the content of the record, to insure that the record is not inaccurate, misleading, or otherwise in violation of his or her privacy or rights, and to provide an oportunity for the correction or deletion of any such inaccurate, misleading, or otherwise inappropriate data contained therein or include the student's own statement of explanation.
- 4. The University will comply with requests from students to review their record within a reasonable period of time and not later than thirty (30) days after the requests are received.
- The release of academic records requires the written permission of students, except as provided by public law 93-380. Transcripts are not issued to students who have not met their financial obligations to the University.
- Copies of the "University's Statement" concerning access to students' records are available in the Office of Registration and Records, the office of each school dean and department chairperson.

CHANGE OF NAME AND ADDRESS

It is the obligation of every student to notify the Office of Registration and Records of any change in name or address. Failure to do so can cause serious delay in the handling of student records and in notification of emergencies at home.

TRANSCRIPTS OF RECORDS

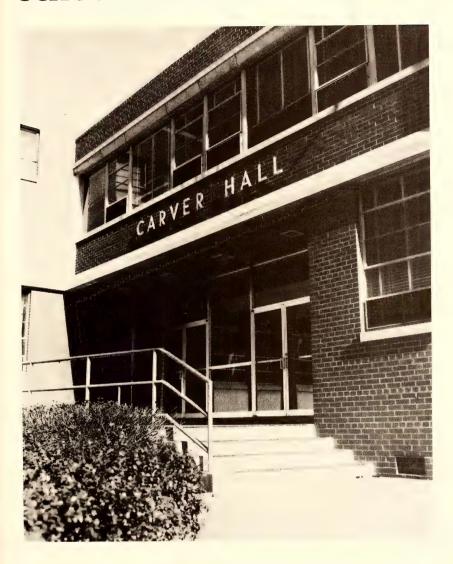
Requests for transcripts of students' records should be addressed to the Director of Registration and Records.

INDEBTEDNESS TO THE UNIVERSITY

No diploma, certificate or transcript of a record will be issued to a student who has not made a satisfactory settlement with the cashier for all indebtedness to the University. A student may not be permitted to attend classes or final examinations after the due date of any unpaid obligation.



SCHOOL OF AGRICULTURE





School of Agriculture

Section 6

Burleigh C. Webb, Dean

Philosophy and Objectives. The School of Agriculture embraces the fundamental philosophy of the Land-Grant Institution and it accepts the obligation to provide a program of resident instruction, research and non-formal instruction adequate to meet the needs of those who seek this service. It administers to the general needs of an interdependent rural-urban society and to the special needs of those who desire and benefit from instruction in agriculture, research and extension and home economics.

The objectives of the School of Agriculture are twofold: (1) to extend the academic proficiency of its students through organized instruction and research and (2) to share its resources with its clientele through organized short courses, conferences, and related activities designed to meet special needs.

AGRICULTURAL RESEARCH PROGRAMS

Organized research is conducted in Agriculture and Home Economics by a research faculty with joint appointments in the instructional program. Much of the research activity is sponsored by the Cooperative State Research Service and the United States Department of Agriculture. It is conducted on the University farm and in on-campus laboratories where investigations include such disciplines as Agricultural Economics, Animal Science, Plant Science, Landscape Architecture and Design, Human Nutrition and Textiles.

AGRICULTURAL EXTENSION SERVICE

Agricultural Extension is an educational service which provides information and assistance in a broad range of subjects to individuals, families, and organized groups in rural and urban areas of the state. The Agricultural Extension Service at North Carolina Agricultural and Technical State University is an integrated function of the state-wide program headquartered at North Carolina State University, Raleigh, North Carolina.

INSTRUCTIONAL PROGRAMS

Departmental Organization. The School of Agriculture is organized into the following departments: (1) Agricultural Economics, (2) Agricultural Education, (3) Animal Science, (4) Home Economics, (5) Plant Science.

Requirements for admission. The requirements for admission to the School of Agriculture are the same as the general requirements for admission to the University.

Requirements for Graduation. The requirements for graduation for the Bachelor of Science Degree are as follows:

- The student must have satisfied the course requirements of an approved curriculum in an organized department administered by the School of Agriculture
- The student must have earned a cumulative average quality of at least a "C" in his or her major courses and in his or her overall academic program.

Curricula. The curricula of the School of Agriculture are designed to provide the students who pursue courses of instruction leading to the Bachelor of Science Degree (1) a fundamental understanding of the basic disciplines which are applied to their respective majors; (2) liberal education experiences offered by the University; and (3) knowledge and competency required for specialization.

The Master of Science Degree is offered in Agricultural Education, Agricultural Economics and Food Nutrition. (For further details consult the Graduate

School Bulletin.)

A. Agriculture

Programs in Agriculture at the bachelors level lead to a degree in Agricultural Technology, Agricultural Science, Agricultural Economics, Agricultural Education and Landscape Architecture.

B. Home Economics

The curricula leading to the Degree of Bachelor of Science in Home Economics are offered in the area of (1) Clothing, Textiles and Fashion Merchandising, (2) Food and Nutrition, (3) Home Economics Education, (4) Child Development, and (5) Food Science.

Clothing, Textiles and Fashion Merchandising. This major leads to profes-

sional opportunities in clothing, textiles, fashion and business.

Food and Nutrition. The major in food and nutrition provides two options:

(1) Food and Nutrition, (2) Therapeutic Dietetics.

Home Economics Education. The Home Economics Education major is designed to provide the necessary training skills for teachers of home economics, for graduate study and for a variety of careers with service organizations with concern for individual and family development.

Child Development. The major in Child Development prepares students for positions as directors of nursery schools, hospital child care specialist, child care specialist in industry, state, local government and community sponsored agencies, day care specialist, media consultant for children's programs, private ownership in child care, and graduate study.

C. Cooperative Program in Food Science

The major in Food Science is conducted through a 3-1 plan whereby the first three years of prescribed work are done at North Carolina A. and T. State University, and the fourth year is completed in cooperation with North Carolina State University at Raleigh.

DEPARTMENT OF AGRICULTURAL ECONOMICS

Sidney H. Evans, Chairperson

OBJECTIVES:

The Department of Agricultural Economics offers programs leading to the bachelors degree and the Master's degree in this field. Students who pursue the bachelors degree may concentrate in General Agricultural Economics and Agribusiness. The major is offered in cooperation with the Department of Economics in the School of Business and Economics.

The objective of these programs is to train students to apply the tools of economics in a systematic approach to management problems of agri-business, farming, rural development, urban planning, and various levels of government.

DEGREES OFFERED:

Agricultural Economics-B.S.

Agri-Business-B.S.

*Agricultural Economics—M.S.

GENERAL PROGRAM REQUIREMENTS:

The admission of students to the undergraduate degree program is based upon the general admission requirements of the University.

DEPARTMENT REQUIREMENTS:

The undergraduate major in Agricultural Economics must complete a minimum of 124 semester hours of University courses. Both, the General Agricultural Economics major and the Agri-business major must take a "core" requirement of 30 semester hours in Agricultural and General Economics.

A representative distribution of disciplines, and requirements for the undergraduate Agricultural Economics majors is as follows:

Discipline Areas	General Agricultural Economics Major	Agri-Business Major
General Education	49 Semester Hours	44 Semester hours
Agricultural Economics	30 Semester Hours	30 Semester hours
Economics	18 Semester Hours	18 Semester hours
Technical Agriculture	9 Semester Hours	9 Semester hours
Electives	18 Semester Hours	18 Semester hours
Business Administration		
and Accounting		18 Semester Hours

^{*} See the Bulletin of the Graduate School.

CAREER OPPORTUNITIES:

A bachelors degree in the field of Agricultural Economics prepares students for careers in Business, Industry, Government and for pursuing graduate work.

CORE COURSES FOR AGRICULTURAL ECONOMICS MAJORS

Course & Number	Credit hours	Course Title
Econ. 300	3	Principles of Economics (Micro Econ.)
Econ. 301	3	Principles of Economics Macro Principles
Ag. Econ. 330	3	Introduction to Agricultural Economics
Ag. Econ. 332	3	Elements of Farm Management
Ag. Econ. 334	3	Marketing Agricultural Products
Ag. Econ. 336 Econ. 305 or	3	Agricultural Prices
Ag. Econ. 644 Econ. 310 or	3	Elementary Statistics
Ag. Econ. 646	3	Advance Statistics
Econ. 410	3	Intermediate Micro Theory
Econ. 420	3	Intermediate Macro Theory

PROGRAM FOR AGRICULTURAL ECONOMIC MAJORS CONCENTRATING IN AGRI-BUSINESS

Freshman Year

1st Semester	Credit	2nd Semester	Credit
English 100, 101	3	English 100, 101	3
History 100, 101	3	History 100, 101	3
Mathematics 111, 112, or 113	4	Mathematics 111, 112, or 113	4
Physical Science 100	4	Physical Science 100	_
Biological Science 100	_	Biological Science 100	4
Air or Military Science		Air or Military Science	
or Electives	1	or Electives	_2
	15		16

PROGRAM FOR AGRICULTURAL ECONOMIC MAJORS CONCENTRATING IN AGRI-BUSINESS

Sophomore Year

1st Semester	Credit	2nd Semester	Credit
Humanities 200, 201	3	Humanities 200, 201	3
Physical Education		Physical Education 200	2
Economics 300, 301	. 3	Economics 300, 301	3
Psychology 320	3	Psychology 320	-
Ag. Econ. 330	-	Ag. Econ. 330	3
Animal Science 301		Animal Science 301	
Plant Science 110		Plant Science 110	
Poultry Husbandry 317	3	Poultry Husbandry 317	3
Econ. 305 or Agri. Econ. 644		Econ. 305 or Agri. Econ. 664	_3
	15		17

Junior Year

lst Semester	Credit	2nd Semester	redit
Ag. Econ. 332, 334	3	Ag. Econ. 332, 334	3
Accounting 221, 222	3	Accounting 221, 222	3
Speech 250	-	Speech 250	2
Sociology 100 or Rural Soc. 30	0 3	Sociology 100 or Rural Soc. 300	-
Electives (Major Area)	-	Electives (Major Area)	6
Economics 310 or Agri. Econ.			
646	3	Economics 310 or Agri. Econ. 646	_
Economics 410, 420	3	Economics 410, 420	3
	15		17

Senior Year

1st Semester	Credit	2nd Semester	Credit
Agri. Econ. 336 Business Administration 451,	3	Agri. Econ. 336	-
452	3	Business Administration 451, 452	3
Business Administration 361	3	Business Administration 361	-
Business Administration 453	_	Business Administration 453	3
Electives (Major Area)	. 3	Electives (Major Area)	6
Electives	_	Electives	3
Agri. Econ. 640	_3	Agri. Econ. 640	
	15		15

Major and other electives should be chosen under the consultation of the advisor.

PROGRAM FOR GENERAL AGRICULTURAL ECONOMICS MAJORS

Freshman Year

1st Semester	Credit	2nd Semester	Credit
English 100, 101	3	English 100, 101	3
History 100, 101	3	History 100, 101	3
Biological Science 100	4	Biological Science 100	-
Physical Science 100	_	Physical Science 100	4
Math 111, 112 or 113	4	Math 111, 112 or 113	4
Air or Military Science or			
Electives	1	Air or Military Science or	
		Electives	_1
	15		15

Sophomore Year

1st Semester	Credit	2nd Semester	Credit
Humanities 200, 201	3	Humanities 200, 201	. 3
Economics 300, 301	3	Economics 300, 301	3
Animal Science 301; Plant Sci			
110	3	Animal Science 301; Plant Sci.	3
Sociology 100 or Rural Soc. 30	00 3	Sociology 100 or Rural Soc. 30	0 -
Agri. Econ. 330	-	Agri. Econ. 330	3
Economics 305, 310	3	Economics 305, 310	3
Poultry Science 317; Physical	Ed.		
200	3	Poultry Science 317; Physical I	Ed.
	_	200	_2
	18		17

Junior Year

1st Semester	Credit	2nd Semester	Credit
Agri. Econ. 332, Electives Economics 410, 420	3 3	Agri. Econ. 332, Electives Economics 410, 420	3
Foreign Language	3	Foreign Language	3
Agricultural Economics 334,	336 3	Agricultural Economics 334, 33	36 3
Elective Major Area	3	Elective Major Area	3
Speech 250	_2	Speech 250	_2
	17		15

Senior Year

1st Semester	Credit	2nd Semester	redit
Elective Major Area	3	Elective Major Area	6
Agri. Econ. 638	. 3	Agri. Econ. 638	-
Free Elective	3	Free Elective	3
Business Admin., Econ. o.	r Math		
Electives	6	Business Admin., Econ. or Math	1
		Electives	6
	15		15

Major and other electives should be chosen by the student in consultation with his or her advisor.

DEPARTMENT OF AGRICULTURAL EDUCATION

A. P. Bell, Chairperson

The Department of Agricultural and Extension Education prepares students for positions in educational fields in agriculture and related areas including schools and colleges, agricultural extension, business, trade and professional associations, and government agencies. The Department administers a program approved by the State Department of Public Instruction for the preparation of teachers of agriculture in the public school systems. The program includes courses in general education, professional education, and technical agriculture.

DEGREES OFFERED

Agricultural Education—B.S.

*Agricultural Education-M.S.

GENERAL PROGRAM REQUIREMENTS

Admission of students to the undergraduate degree program in Agricultural Education is based on the general admission requirements of the University.

^{*} See Graduate Bulletin for details.

DEPARTMENTAL REQUIREMENTS

The Agricultural Education majors must complete 130 semester hours of credit. Included in the 130 semester hours are general education courses, professional education courses, and technical agriculture courses. A minimum grade of "C" must be achieved and maintained in these courses.

CAREER OPPORTUNITIES

A degree in Agricultural Education prepares students for careers in educational fields in agriculture and related areas. These included teaching and supervision in schools and colleges, agricultural extension, business and industry, trade and professional organizations and governmental agencies.

PROGRAM FOR AGRICULTURAL EDUCATION MAJORS

Freshman Year

Course and Number	Fall Semester Credit	Spring Semester Credit
English 100, 101	3	3
Mathematics 101, 102	3	3
History 100, 101	3	3
Botany 140	4	-
Zoology 160	-	4
Physical Education 101, 102	1	1
Agricultural Education 101, 102	1	1
Air or Military Science (Elective)	<u>(1)</u>	<u>(1)</u>
	15	15

Sophomore Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Speech 250	-	2
Psychology 320, 325	3	3
Chemistry 104, 105	4	4
Plant Science 110	-	3
Agricultural Engineering 114	3	-
Animal Science 111	3	-
Humanities 200, 201	3	3
Health Education 200	2	-
Economics 300 or Agricultural		
Economics 330	-	3
Air or Military Science (Elective)	<u>(2)</u>	<u>(2)</u>
	18	18

Junior Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Agricultural Education 400, 402	2	2
403	2	2
Bacteriology 121	4	-
Soil Science 338	-	4
Education 400	3	-
*Technical Agricultural Electives	3	6
Free Electives	_3	_3
	17	17

Senior Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Agricultural Economics 332	3	-
Agricultural Education 501, 502	3	6
Agricultural Education 503	-	3
Agricultural Engineering 525	-	3
Rural Sociology 330 or Agricultural		
Education 609	3	-
Zoology 468 or Botany 530	3	-
*Technical Agricultural Elective	3	_
Free Elective	_3	
	18	12

Agricultural Education Concentration

The Agricultural Education major may follow a program with concentration in one of the following subject matter areas:

Agricultural Economics Agricultural Engineering Animal Science Communication Horticulture Plant Science Soil Science

The program will be worked out on an individual basis by the student and his advisor. Students may do a concentration in the area of Environmental Science by taking selected courses relating to the environment in the above

^{*} Fifteen credits should be completed in one subject matter area (Technical Agriculture).

subject matter areas and other areas which will prepare them for such teaching in the Agricultural Curriculum of the secondary schools. Suggested courses for these options are available in the Agricultural Education Department.

DEPARTMENT OF ANIMAL SCIENCE

George A. Johnson, DVM, Chairperson

OBJECTIVES

The purpose of the Animal Science Department is to provide a service to the people of North Carolina, the Southeast, the United States and the world in resident instruction, research and continuing education related to the sciences and technologies of animal science and allied areas.

DEGREES OFFERED

Agricultural Science—B.S.

Areas of concentration: Animal Science, Dairy Science, Dairy Technology or Poultry Science

Food Science—B.S.

This program is offered in cooperation with the Department of Home Economics.

GENERAL PROGRAM REQUIREMENTS

The admission of students to the undergraduate degree programs in the Department of Animal Science is based upon the general admission requirements of the University.

DEPARTMENTAL REQUIREMENTS

The Department of Animal Science majors must complete 124 semester hours of University courses. Included in the 124 semester hours are thirty hours as major electives which are to be taken such that: 12 credits are elected from supporting courses: 18 credits are elected from the area of concentration with approval of the advisor. A minimum grade of "C" must be achieved in these courses.

CAREER OPPORTUNITIES

Agricultural Science and Agricultural Technology

Career opportunities available in the following industries: livestock feed industry, livestock production, meat processing, livestock marketing, pharmaceutical equipment manufacturing, dairy industry, poultry industry, teaching, research and governmental agencies.

Veterinary Animal Science

The department offers a four-year curriculum in Veterinary Animal Science which provides training for several career options which can prepare students for: admission to schools of Veterinary Medicine, admission to graduate school, careers as laboratory animal technologists, as biomedical research assistants, and as agents in animal breeding compounds, research facilities, food manufacturing firms, veterinary hospitals, colleges, pharmaceutical companies and governmental agencies.

Food Science

Career opportunities are available in the fruit, vegetable, meat, poultry and dairy industries in raw product and processing plant operations, management, procurement, cost and quality control, and sales and distribution. Other opportunities are available with governmental agencies, educational institutions and research organizations.

PROGRAM FOR BACHELOR OF SCIENCE IN AGRICULTURAL TECHNOLOGY

Freshman Year

Course and Number	Fall Semester Credit	Spring Semester Credit
English 100, 101	3	3
Animal Science 111, Agric. Engineering 114	3	3
Botany 140, Zoology 160	4	4
Mathematics 101, 102	4	4
Agric. Education 101, 102	_1	_1
	15	15

Sophomore Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Humanities 200, 201	3	3
History 100, 101	3	3
Chemistry 101, 102, 111, 112	4	4
Animal Science 212, 214	3	3
Plant Science 110	3	-
Health Education 200		_2
	16	15

	Ve	

Course and Number	Fall Semester Credit	Spring Semester Credit
Economics 301; Agric. Economics 330	3	3
Dairy Science 321, Animal Science 314 Bacteriology 121	3	3
Soil Science 338; Poultry Sci.	3	3
*Electives (Major emphasis)	8	_3
	1/	16

Senior Year

Course and Number	Fall Semester Credit	Spring Semeste Credit
Plant Science 370; Agric. Engineering		
402	3	3
Agric. Economics 332	3	3
*Elective (Major emphasis)	6	6
Free Electives	_3	
	15	12

Supporting Courses (Electives)

Agricultural Economics 334, 336; Business 430, 430; Speech 250, 251; Chemisry 251, 252; Agricultural Engineering 303, 523; Industrial Technology 490; Mathematics 240.

Required courses for dairy emphasis: Dairy Science 340, Animal Science 413 and Veterinary Animal Science 461.

Required courses for poultry emphasis: Poultry Science 553, 556, and 657.

^{*} The major emphasis electives are to be selected in consultation with and consent of the advisor to enable you to specialize in meat animal, dairy or poultry production.

Required courses for meat animal emphasis: Animal Science 312 and 413, Veterinary Animal Science 461.

^{*} The 28 credits as major electives are to be taken such that: 12 credits are selected from supporting courses; 16 credits are selected from one of the following areas of concentration: Animal Science, Dairy Science, Dairy Technology and Poultry.

PROGRAM FOR BACHELOR OF SCIENCE IN AGRICULTURAL SCIENCE

Freshman Year

Course and Number	Fall Semester Credit	Spring Semester Credit
English 100,101	3	3
Animal Science 111; Agric.		
Engineering 114	3	3
Botany 140, Zoology 160	4	4
Mathematics 111, 113	4	4
Agric. Education 101, 102	_1	_1
	15	15

Sophomore Year

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Course and Number	Fall Semester Credit	Spring Semester Credit
Humanities 200, 201	3	3
History 100, 101	3	3
Chemistry 106, 116; 107, 117	5	5
Animal Science 212, 214	3	3
Plant Science 110; Health Education		
200	_3	_2
	17	16

Junior Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Physics 225, 226	4	4
Economics 301; Mathematics 224 Chemistry 221, 223; Chem. 222,	3	3
224 Poultry Science 357; Bacteriology	5	5
121 *Electives (Major emphasis), Animal	3	4
Science 314	_3	_3
	18	19

^{*} The major emphasis electives are to be selected in consultation with and consent of the advisor to enable you to specialize in meat animal, dairy or poultry production.

Required courses for meat animal emphasis: Animal Science 312 and 413, Veterinary Animal Science 461.

Required courses for dairy emphasis: Dairy Science 340, Animal Science 413 and Veterinary Animal Science 461.

Required courses for poultry emphasis: Poultry Science 553, 556 and 657.

Senior Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Agric. Economics 330; Soil Science		
338	3	3
Dairy Science 321	-	3
*Elective (Major emphasis)	6	3
Free Electives	_3	_3
	12	12

Supporting Courses (Electives)

Zoology 461, 465, 466; Agricultural Economics 332, 334, 336; Chemistry 222, 224; 251, 252; Speech 250, 251.

PROGRAM FOR VETERINARY ANIMAL SCIENCE

Freshman Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Chemistry 106, 107	3	3
Chemistry Lab. 116, 117	1	1
English 100, 101	3	3
History 101	3	-
Mathematics 111, 113	4	4
Physical Education Electives	1	1
Political Science 200	-	3
Veterinary Animal Science 161, 162	_1	_1
	16	16

Sophomore Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Animal Science 111, 351	3	3
Biology 140, 160	. 4	4
Chemistry 221, 222	3	3
Chemistry Lab. 223, 224	2	2
Electives	-	3
Veterinary Animal Science 261	_2	-
	14	15

^{*} The 30 credits required as major electives are to be taken such that: 12 credits are elected from supporting courses; 18 credits are elected from the area of concentration with approval of the advisor.

Junior Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Animal Science 214	3	4
Biology 121, 260	4	3
Humanities 200, 201	3	4
Physics 225, 226	4	2
Speech 250	-	4
Veterinary Animal Science 361	-	-
Electives	3	
	17	17

Senior Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Animal Science 212, 611	3	3
Animal Science 612	-	2
Chemistry 651	5	-
Veterinary Animal Science 461	3	-
Veterinary Animal Science 426	3	-
Veterinary Animal Science 562	-	3
Animal Science 618	-	1
Electives	-	6
	- 1	
	14	15

Total Semester Hours 124

PROGRAM FOR BACHELOR OF SCIENCE IN FOOD SCIENCE1

Freshman Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Mathematics 112, 113	4	4
English 100, 101	3	3
*Chemistry 101, 102 or 106, 107	3	3
*Chemistry (lab) 111, 112	1	1
Botany 140; Zoology 160; or Biology		
100	4	4
Agric. Ed. 101 or Home Economics		
101	1	-
Health Education 200	-	2
	_	
	16	17

¹Offered in cooperation with the Department of Home Economics

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Course and Number	Fall Semester Credit	Spring Semester Credit
Electives (Mathematics) ² , 221 Org. Chemistry 221, Elective	3-4	-
(Chem.) ^b	3	3-5
Org. Chemistry 223 (lab), Bact. 121 Int. Food Sci. 236, Food Sci. 337	2	4
Nutrition	3	3
History 100, 101, or Econ. 301 or 330	3	3
Physical Education 246, 247 Social Science or Humanities	1	1
(Elective)	_ '	3
	15-16	17-19

Junior Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Humanities 200, 201	3	3
Speech 251, Literature (Elective)	3	3
Food Science 401 or 340 or 505	3	3
Physics 225 ^c	4	-
Elective		3
	16	15-18

Senior Yeard

Course and Number	Fall Semester Credit	Spring Semester Credit
Food Science 331, 490	3	1
Food Science 402, 503	3	3
Food Science 405, 511 or 516	3	3
Food Science 521, Food Science		
(Elective)	3	3
Elective	3	5
		
	15	15

^aStudents with interest in graduate school or science emphasis should elect Mathematics 221.

^bStudents with interest in graduate school or science emphasis should elect Chemistry 222 and 224.

^cStudents with interest in graduate school or science emphasis should elect Physics 226.

^dSenior year for B.S. in Food Science may be completed at North Carolina State University in Raleigh for a joint degree issue by both institutions.

Senior Vear²

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Course and Number	Fall Semester Credit	Spring Semester Credit
Food Analysis, F&N 635	-	3
Food Preservation F&N 643	3	-
Food Technology Seminar, ANS 618	1	-
Advanced Food Science F&N 631		
(Food Chem.)	3	-
Food Engineering ANS 522	-	3
Food Microbiology, Bio. 420	3	-
Major area Electives	3	3
Supportive Electives	_3	_6
	15	15

DEPARTMENT OF HOME ECONOMICS

Harold E. Mazyck, Chairperson

OBJECTIVES

The objectives of the Home Economics Department are:

- 1. To develop satisfying personal, group and family relationships as a basis for active participation in a democratic society;
- To understand the enrichment of home and family living through the appreciation and use of art and advances in science and technology;
- To develop an understanding and appreciation of varying cultural backgrounds; and
- To prepare the individual for gainful employment in one of the major areas of the profession.

DEGREES OFFERED

1. Home Economics—concentrations in

Clothing, Textiles and Fashion Merchandising-B.S.

Food and Nutrition—B.S.

Dietetics-B.S.

Home Economics Education-B.S.

Child Development—B.S.

² Students electing to remain at A&T will pursue the following courses which are similar to those offered at N.C. State University at Raleigh and qualify them for the BS degree in Food Science from A&TSU.

- 2. Food Science-B.S.
- 3. Nutrition-M.S.

Home Economics courses are not restricted to majors in the Department. All introductory courses may be taken by any student. Admittance to other courses may be secured upon receiving approval of the instructor.

GENERAL PROGRAM REQUIREMENTS

The admission of students to the undergraduate degree programs in the Home Economics Department is based upon the general admission requirement of the University.

See Graduate Bulletin for graduate program requirements.

DEPARTMENTAL REQUIREMENTS

Home Economics undergraduate major—The major in Home Economics and all of the concentrations must complete 124 semester hours of University courses. A minimum grade of "C" must be achieved in these courses for graduation.

Food Science undergraduate major—The Food Science major must complete a minimum of 124 semester hours of University course work. A minimum grade of "C" must be achieved in these courses for graduation.

ACCREDITATION

The Home Economics Teacher Education program is accreditated by the National Council for Accreditation of Teacher Education and approved by the North Carolina State Department of Public Instruction under the University-wide accreditation and approval of teacher education programs.

The Dietetic program is approved under Plan IV by the American Dietetic Association.

CAREER OPPORTUNITIES

The programs in the home economics department prepare students for careers in child development, clothing and fashion merchandising, teaching, dietetics, food and nutrition and food science.

PROGRAM FOR THE MAJOR IN CLOTHING, TEXTILES AND FASHION MERCHANDISING

This major leads to professional opportunities in clothing, textiles, fashion and business.

Freshman Year

	Fall Semester Credit	Spring Semester Credit
Course and Number		
English 100, 101	3	3
Mathematics 101, 102	3	3
History 100, 101	3	3
Physical Ed. 101, 102	1	1
Home Economics 101	1	-
Food & Nutrition 133	3	-
French 100	3	-
Home Economics 122, 123		_5
	17	15

Sophomore Year

Soprioniore	I Cai	
Course and Number	Fall Semester Credit	Spring Semester Credit
Humanities 200, 201	3	3
**Natural Science	4	.4
Sociology 100	3	-
Anthropology 200 or 300	3	-
Home Economics 401	-	3
Art 225 or 224	-	2
Speech 250	-	2
Home Economics 321, 124	_4	_3
	17	17

^{**}Chemistry 104, 114, 105, 115 or Biological Science 100 and Physical Science 100, 110

Junior Year

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Course and Number	Fall Semester Credit	Spring Semester Credit
Art 226, 227	3	3
Business Adm. 220, 360	3	3
*Accounting 221	3	-
Economics 302	-	3
Psychology 320	3	-
Home Economics 423, 426,		
425	4	6
Electives	2-3	2-3
	16-18	15-18

Senior Year

Course and Number	Fall Semester Credit	Spring Semester Credit
*Business Ad. 430, 433	3	3
Home Economics 521, 523*	4	4
Home Economics 403	3	-
Electives	3-4	7-8
	13-14	14-15

^{*}Students in the general clothing and textiles program may substitute clothing and textiles electives for these courses.

PROGRAM FOR THE MAJOR IN FOOD AND NUTRITION

A major in food and nutrition has two options: Option I: Food and Nutrition and Option II: Dietetics. This program offers preparation for technical laboratory work leading to advanced study and meets the requirements of the American Dietetic Association for approved internships.

PROGRAM FOR THE OPTION IN FOOD AND NUTRITION

The option in food and nutrition provides preparation for a position as an assistant technician in a research laboratory but it is designed primarily for entrance into graduate study. A student desiring to meet the requirements of The American Dietetic Association for an approved internship may qualify by taking courses listed under REQUIREMENTS FOR AREAS OF SPECIALIZATION IN DIETETICS.

OPTION I: FOOD AND NUTRITION

Freshman Year

Course and Number	Fall Semester Credit	Spring Semester Credit
English 100, 101	3	. 3
Home Economics 101	1	-
Mathematics 111, 112	4	4
Physical Education 101, 102	1	1
History 100, 101	3	3
Chemistry 106, 116 and 107,	_	
117	5	_5
	17	16

Sophomore Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Clothing, Textiles and Fashion		
Merchandising 122	2	-
Food and Nutrition 337, 130	3	4
Humanities 200, 201	3	3
Bacteriology 121	-	4
Chemistry 221, 223, and 222,		
224	5	5
Home Economics 403	_3	
	16	16

Junior Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Food and Nutrition 338	-	3
Food and Nutrition 331	-	2
Food and Nutrition 236	-	3
Zoology 160, 461	4	4
Chemistry 231, 232, and 651	5	5
Psychology 320	3	-
Electives	_5	
	17	17

Senior Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Home Economics 401	-	3
Physics 201	3	
Food and Nutrition 635, 637	3	3
Food and Nutrition 630	-	3
Electives	_7	_3
	13	12

PROGRAM FOR THE OPTION IN DIETETICS

Minimum Academic Requirements of The American Dietetic Association for Specialization in an Area of Dietetics

The program outlined below meets the *minimum basic requirements* of The American Dietetic Association. Areas of specialization should be selected in consultation with the academic advisor. Completion of the basic plus the area of specialization requirements which follow will prepare a graduate for an approved American Dietetic Association Internship.

OPTION 2: DIETETICS

Freshman Year

	Fall Semester	Spring Semester
Course and Number	Credit	Credit
English 100, 101	3	3
Zoology 160, 461	4	4
Home Economics 101	1	-
Mathematics 101, 102	3	3
History 100, 101	3	3
Physical Education 101, 102	1	1
Clothing, Textiles and Fashion		
Merchandising 122	+	2
_		
	15	16

Sophomore Year

Course and Number	Fall Semester Credit	Spring Semeste Credit
Chemistry 104, 114 and 105,		
115	4	4
Humanities 200, 201	3	3
Food and Nutrition 337, 130	3	4
Food Administration 344	3	-
Food Administration 345, 346	-	6
Area of Specialization Requirements		
and/or Electives	3	-
	_	_
	16	17

Junior Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Economics 301	3	_
Psychology 320, 435	3	3
Bacteriology 121	4	-
Food and Nutrition 448, 331	_	5
Home Economics 410	-	3
Area of Specialization Requirements		
and/or Electives	6	5
	16	16

18

Senior Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Home Economics 403	3	-
and/or Electives	12	<u>13</u>
	15	13

REQUIREMENTS FOR AREAS OF SPECIALIZATION IN DIETETICS

General Dietetics

Chemistry 251 Chemistry 252	Elementary Biochemistry
Sociology 100 Home Economics 338	Principles of Sociology
	9
Recommended	
Mathematics 224	Introduction to Probability
or	and Statistics
Mathematics 240	Introduction to the Programming of Digital Computers3
Clinical and Therapeutic	
Chemistry 251	Elementary Biochemistry 2
Chemistry 252	Elementary Biochemistry Laboratory
Sociology 100	Principles of Sociology3
Home Economics 338	Diet Therapy3
Home Economics 630	Advanced Nutrition
Mathematics 224 or	Introduction to Probability and Statistics
Mathematics 240	Introduction to the Programming of Digital Computers3

Chemistry 251	Elementary Biochemistry
Chemistry 252	Elementary Biochemistry
•	Laboratory
Sociology 100	Principles of Sociology3
Home Economics 338	Diet Therapy3
Home Economics 630	Advanced Nutrition
Mathematics 224	Introduction to Probability
or	and Statistics3
Sociology 302	Social Statistics I
0.	-
	15

Management

Business Adminstration 204	Introduction to Business3
Business Administration 305	Principles of Management
Business Administration 569	Personnel Organization and
	Management3
Accounting 221	Principles of Accounting I3
Accounting 222	Principals of Accounting II3
Accounting 446	Managerial Accounting3
Mathematics 224	Introduction to Probability
or	and Statistics3
Mathematics 240	or
	Introduction to the Programming
	of Digital Computers3
	21

PROGRAM FOR THE MAJOR IN CHILD DEVELOPMENT

The program provides a broad knowledge of children through the study of their growth, development and relationships. Students can select supporting courses in psychology, sociology, food and nutrition or other areas of special interest. A variety of appropriate experiences with young children, their families and community agencies is an integral part of the program. Employment opportunities for students in this curriculum include teachers and/or supervisors of pre-school groups (Head Start, Day Care, Nursery Schools, public and private); Child Care Specialist in Federal, State, and County Service Programs; Media consultant for Children's Programs; Community Service Agencies; and for graduate school.

CHILD DEVELOPMENT CURRICULUM

Freshman Year

	Fall Semester	Spring Semester
Course and Number	Credit	Credit
English 100, 101	3	3
Mathematics 101, 102 or 111	3	3
History 100, 101	3	3
Physical Education 101, 102	1	1
Clothing, Textiles and Fashion		
Merchandising 122	2	-
Home Economics 101	1	-
Food and Nutrition 133	3	-
Child Development 315	-	3
Health Education 200		_2
	15	15

Sophomore Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Humanities 200, 201	3	3
Psychology 320	3	-
Child Development 311, 312	3	3
Physical Science 100	4	4
Zoology 461	-	-
Art 101 or 226	3	-
Sociology 100	-	3
Speech & Drama 250	-	2
Child Development 414		
Materials, Methods & Evaluation 1		_3
	16	18

Junior Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Child Development 416 Play-Materials & Equipment	-	3
Child Development 415 Materials, Methods & Evaluation II Child Development 417 Parent	3	-
Education	2	-
Food and Nutrition 437	3	-
Home Economics 400, 403	3	3
Child Development 420		
Day Care Services	-	3
Psychology 434, 435	3	3
Music 609		
Music in Early Childhood	-	3
Electives	_3	
	17	15

Senior Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Child Development 418		
Curriculum Planning	3	-
Child Development 519		
Practicum in Nursery School	3	-
Child Development 419		
Practicum in Community Agencies	3	-
Child Development 61	-	2
Home Economics 401	-	3
Electives	_6	_7
	15	12

PROGRAM FOR THE MAJOR IN HOME ECONOMICS EDUCATION

The basic program in Home Economics Education is designed for students to develop competencies needed for teaching Consumer-Home Economics in public schools. Focus areas provide opportunities for the student to gain greater depth in subject matter; increased understanding of special groups of learners; preparation for interrelated professional careers with business, industry, and service organizations concerned with individual and family development. The program also served as an exploratory base for graduate study.

FOCUS AREAS

Adult Education
Child Development & Family
Relations
Clothing and Textiles
Consumer Education & Management

Education for Disadvantaged and/or Handicapped Food and Nutrition Middle School Education Occupational Education & Career Awareness

The student must seriously assume the responsibility of selecting the focus area and electives to complete requirements of the program based on individual ability, needs, and interests by the end of the freshman year. The selection of electives should be made in consultation with the student's advisor.

Freshman Year

Course and Number	Fall Semester Credit	Spring Semester Credit
English 100, 101	3	3
History 100, 101	3	3
Sociology 100 or 200	-	3
Home Economics 101	1	-
Physical Education 101	1	-
Mathematics 101, 102	3	3
Clothing, Textiles and Fashion		
Merchandising 122	2	-
Food and Nutrition 130	4	-
Health Education 200	-	2
Home Economics 200		_2
	17	16

Sophomore Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Chemistry 104, 114, 105, 115 Clothing, Textiles and Fashion	4	4
Merchandising 123	3	-
Humanities 200, 201	3	3
Art 226	3	-
Speech 250	-	2
Education 301	-	2
Psychology 320	3	-
Clothing, Textiles & Related		
Art 321	-	4
Food and Nutrition 331		_2
	16	17

Junior Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Home Economics 300	-	3
Economics 301	-	3
Child Development 311	3	-
Food and Nutrition 337	3	-
Home Economics 400	3	-
Home Economic 403	-	3
Zoology 461 or 469	-	4
Home Economics 500	-	3
Home Economics 502, 503	4	-
Electives	_3	
	16	16

Senior Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Education 400	3	-
Home Economics 401	3	-
Home Economics 505	3	-
Education 528, 560	3	6
Home Economics 604	-	2
Electives	_4	_2
	16	10

Junior Year Alternate

Course and Number	Fall Semester Credit	Spring Semester Credit
Home Economics 300	3	-
Child Development 311	3	-
Food and Nutrition 337	3	- 1
Home Economics 400	3	-
Education 400	3	_
Home Economics 401	-	3
Home Economics 403	-	3
Zoology 461 or 469	-	4
Home Economics 500	-	3
Education 528	-	3
Electives	3	-
	4.0	-
	18	16

Senior Year Alternate

Course and Number	Fall Semester Credit	Spring Semester Credit
Economics 301	-	3
Home Economics 502	-	2
Home Economics 504	-	2
Home Economics 505	-	3
Education 560	6	-
Home Economics 604	2	-
Electives	_2	_4
	10	14

9-12 hours—Elective	
Curriculum—Suggested C	Courses

Hours for graduation 124-127

		53 Semester Hours
I. General Education		
Communication Skills		8
212-100 Freshman Composition I	3 S.H.	
212-101 Freshman Composition II	3 S.H.	
215-250 Speech	2 S.H.	
Humanities and Art		9
212-200 Survey of Humanities I	3 S.H.	
212-201 Survey of Humanities II	3 S.H.	
211-101 Design I	3 S.H.	
	5	

Social Science		15
223-100 History of World Civilization I	3 S.H.	
233-101 History of World Civilization II	3 S.H.	
320-320 General Psychology 235-100 Principles of Sociology	3 S.H. 3 S.H.	
or 235-200 Introduction to	<i>y</i> 5.11.	
Anthropology	3 S.H.	
231-301 Principles of Economics or		
231-302 Principles of Economics	3 S.H.	
Natural Science		12
223-101 General Chemistry I or	4 S.H.	
223-1-4 General Chemistry IV	4 S.H.	
223-102 General Chemistry II or		
223-105 General Chemistry V	4 S.H.	
224-461 Human Anatomy & Physiology	4 S.H.	
or		
221-469 Human Anatomy	4 S.H.	
Mathematics		12
225 - 101 Freshman Mathematics I 225 - 102 Freshman Mathematics II	3 S.H. 3 S.H.	
	9 0.11.	2
Physical Education and Health		3
330-101 Fundamentals of Physical Education	1 S.H.	
330-200 Health Education	2 S.H.	
II. Technical Education		48-49 Semester Hours
Food Nutrition		10-9
170-130 Food Preparation	4 S.H.	
170-133 Family Foods	3 S.H.	
(unless exempted by performance test) or		
170-331 Meal Planning & Table Service		
170-337 Nutrition & Dietetics	3 S.H.	
or 170-435 Nutrition Education	3 S.H.	

Clothing, Textiles and Fashion

Merchandising		9
170-122 Clothing for the Family (unless exempted by performance test)	2 S.H.	
170-123 Textiles 170-321 Family Clothing	3 S.H.	
Construction (unless exempted by performance test)	4 S.H.	
Housing		7
170-400 Contemporary Housing	3 S.H.	
170-502 Equipment	3 S.H. 2 S.H.	
170-503 Interior Design	2 S.H.	
170-504 Home Furnishing	2 S.H.	
Child Development and Family Relationship		6
170-311 Child Development I	3 S.H.	
170-401 Marriage and Family Relationship	3 S.H.	
Consumer Education & Management		6
170-403 Consumer Problems	3 S.H.	
170-505 Home Management Residence	3 S.H.	
Home Economics Education		11
170-101 Introduction to Home		
Economics	1 S.H.	
170-200 Introduction to Home Economics Education		
Economics Education	2 S.H.	
170-300 Program Planning in		
Home Economics	3 S.H.	
170-500 Occupational Home Economics	3 S.H.	
170-604 Seminar) 3.11.	
	2 S.H.	

COOPERATIVE PROGRAM IN FOOD SCIENCE

The Food Science program emphasizes two types of training. (1) a cooperative program between North Carolina A&T and North Carolina State University in Raleigh. In this program a student has 3 years at North Carolina A&T and the final year of professional study at North Carolina State University with emphasis on laboratory research, experimentation, and preparation for graduate study. (2) provides 4 years of Food Science at North Carolina A&T with the opportunity for the student to pursue supportive electives in such area as Business Administration, Food and Nutrition, and Dairy Technology.

PROGRAM IN FOOD SCIENCE

Freshman Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Mathematics 112, 113	4	4
English 100, 101	3	3
*Chemistry 101, 111, 102, 112 or 106,		
116, 117, 107	4-5	4-5
Biology 140, 160 or 100	4	4
Agricultural Education 101 or Home		
Economics 101	1	-
Health Education 200		2
	16-17	17-18

Sophomore Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Electives (Mathematics 221) ^a Chemistry 221, 223, Elective	3-4	-
(Chemistry 222, 224) ^b	5	3-5
Biology 121	-	4
Food Science 236, 337	3	3
330	3	3
Physical Education 246, 247 Social Science or Humanities	1	1
(Elective)		3
	15-16	17-19

Junior Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Humanities 200, 201	3	3
Speech 251, Literature (Elective) Food Science 401 or 340	3	3
or Animal Science 505	3	3
Physics 225, 235	4	_
Social Science or Humanities (Elective) ^c	3	_
Area of Specialization Requirements and/or Electives	_	3-6
	16	15-18

^a Students with interest in graduate school or science emphasis should elect Mathematics 221.

^bStudents with interest in graduate school or science emphasis should elect Chemistry 222, 224.

^CStudents with interest in graduate school or science emphasis should elect Physics 226.

Senior Yeard

Course and Number	Fall Semester Credit	Spring Semester Credit
Food Science 331, 490, 402, 503 Food Science 405, 511 or 516	6 3	4 3
Food Science 521, Food Science (Elective)	3	3
and/or Electives	3 15	- 5 - 15

Senior Year^e

Course and Number	Fall Semester Credit	Spring Semester Credit
Food and Nutrition 631, 635, 643.	6	3
Animal Science 618, 522	1	3
Biology 420	3	_
Area of Specialization Electives	3	3
Supportive Elective	3	6
	16	15

DEPARTMENT OF PLANT SCIENCE AND TECHNOLOGY

Samuel J. Dunn, Chairperson

OBJECTIVES

The objectives of the department of Plant Science and Technology are to meet its responsibilities to society by providing training for professional agriculturalists who can identify, analyze, and solve the problems of today, as well as new problems that may arise in the future. Realizing the dynamic and ever changing nature of modern society, the department seeks to minimize prescriptive procedures and seeks to provide its students with the tools of analysis and the facilities for applying the natural, physical and social sciences to thinking processes that will enable them to relate to man's present and future needs and managing his environment.

^dSenior year for B.S. in Food Science will be completed at North Carolina State University at Raleigh.

^e Students electing to remain at North Carolina A&T will pursue the following courses which are similar to those offered at North Carolina State University at Raleigh.

DEGREES OFFERED

Agricultural Technology-B.S.

Options: (Horticulture, Plant Science and Soil Science)

Agricultural Science—B.S.

Options:

A. Horticulture, Plant Science or Soil Science

B. Agricultural Engineering

C. Earth and Environmental Science

Agricultural Business-B.S.

Options: (Horticulture, Plant Science and Soil Science)

Landscape Architecture-B.S.

GENERAL PROGRAM REQUIREMENTS

These requirements are given in detail in the individual options.

DEPARTMENTAL REQUIREMENTS

Majors in the Department of Plant Science and Technology must complete a minimum of 124 semester hours of University courses. Included in the 124 hours are thirty hours in a major elective depending on the option.

CAREER OPPORTUNITIES

The Department prepares students for a wide latitude of careers in the various areas of environmental science and management as well as in environmental planning and design. Such programs give students the opportunity to develop individual skills according to their aptitudes and the many career opportunities available to them.

PROGRAMS IN AGRICULTURAL TECHNOLOGY

The following options are offered in the department of Plant Science and Technology leading to the B.S. degree in Agricultural Technology.

OPTION A-(HORTICULTURE, PLANT SCIENCE AND SOIL SCIENCE)

Freshman Year

Course and Number	Fall Semester Credit	Spring Semester Credit
English 101, 102	3	3
History 100, 101	3	3
Chemistry 106, 116, 107, 117	5	5
Mathematics 101, 102	3	3
Agricultural Education 101, 102 Air or Military Science or	1	1
(Elective)	1	1
	16	16

Sophomore Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Humanities 200, 201	3 4	3 4
Animal Science 301	3	3
Poultry Science 317	4	3
Air or Military Science or (Electives)	<u>2</u> 16	<u>3</u> 16

Junior Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Bacteriology 121;		
Plant Pathology 530	4	4
Economics 301;		
Agricultural Economics 330	3	3
Technical Physics 211 & 212	4	. 4
*Electives (Major Area)	6	6
	17	17

Senior Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Plant Propagation 334;		
Geology 390	3	3
Agricultural Engineering 303 & 304	3	3
Plant Science Seminar 520	1	1
*Electives (Major Area)	<u>10</u>	<u>10</u>
	17	17

OPTIONAL PROGRAMS IN AGRICULTURAL SCIENCE

The following options are offered in the department of Plant Science and Technology leading to the B.S. degree in Agricultural Science:

- A. Options in Horticulture, Plant Science, or Soil Science
- B. Option in Agricultural Engineering
- C. Option in Earth and Environmental Science

^{*} The 30 credits required as major electives in Plant Science and Soil Science are to be taken such that 12 credits are elected from supporting courses; 18 credits are elected from one of the optional areas with approval of the advisor.

OPTION A-HORTICULTURE, PLANT SCIENCE, SOIL SCIENCE

Freshman Year

Course and Number	Fall Semester Credit	Spring Semester Credit
English 101, 102	3	3
History 100, 101	3	3
Chemistry 106, 116; 107, 117	5	5
Mathematics 111, 113	4	4
Agricultural Education 101, 102	1	1
Air or Military Science or		
(Elective)	1	1
	17	17

Sophomore Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Humanities 200, 201	3	3
Botany 140; Zoology 160	4	4
Agricultural Engineering 113;		
Animal Science 301	3	3
Plant Science 110; Poultry Science 317	3	2
Health Education 200;	9	3
Air or Military Science or (Electives)	2	2
	15	15

Junior Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Physics 211, 212	4	4
Chemistry 221, 222	3	3
Soil Science 338	-	4
Economics 301	-	3
Electives (Major Area)	7	2
Electives	4	2
	18	18

Senior Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Mathematics 224	3	-
Agricultural Economics 330	3	-
Bacteriology 121	_	4
Electives (Major Area)	<u>6</u>	12
	12	16

OPTION B—AGRICULTURAL ENGINEERING Freshman Year

Course and Number	Fall Semester Credit	Spring Semester Credit
English 101, 102	3	. 3
History 100, 101	3	3
Botany 140; Zoology 160	4	4
Mathematics 116, 177	5	5
Agriculture Engineering 112		
(INTRO)	3	3
	18	18

Sophomore Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Humanities 200, 201	3	3
Chemistry 106, 107	3	3
Chemistry 116, 117	2	2
Physics 221, 222	5	5
Plant Science 110; Mech. Engr. 101. Mechanical Engineering 102;	3	3
Math 240	3	3
	19	19

Junior Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Soil Science 338; Bacteriology 121	4	4
Mathematics 300	4	-
Economics 301; Agric. Econ. 330	3	3
Mechanical Engineering 335, 336	4	4
Poultry Science 317; Animal Science		
301	3	3
Electives		3
	18	17

Senior Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Agriculture Engineering 401, 402	3	3
Mechanical Engineering 337, 416	3	3
Agriculture Engineering 523	3	-
Mechanical Engineering 441;		
Agri. Engr. 600	3	3
Agriculture Engineering 303, 304	3	3
Electives	3	6
	18	18

Suggested Electives

Mathematics 500/Introduction to Applied Mathematics Mechanical Engineering 210/Computer Programming in Engineering Industrial Technology 492/Technical Writing Speech 250/Speech Fundamentals Business Administration 451/Business Law Business Administration 361/Introduction to Data Processing

Supporting Courses

Agricultural Engineering 524, 600, 602; Mechanical Engineering 260, 442-560; Mach. 300.

OPTION C-EARTH AND ENVIRONMENTAL SCIENCE

Freshman Year

	Fall Semester	Spring Semester
Course and Number	Credit	Credit
Freshman Composition 100, 101	3	3
History of World Civilization 100,		
101	3	3
Math 111, 113	4	4
Physical Ed. 101, 102	1	1
Plant Science 110;		
Major Elective	2	2
Chemistry 106, 116; 107, 117	5	5
Air or Military Science	<u>(1)</u>	<u>(1)</u>
	18	18

Sophomore Year

Common of Nordon	Fall Semester	Spring Semester Credit
Course and Number	Credit	Creatt
Humanities 200, 201	3	3
Botany 140;		
Zoology 160	4	4
Soil Science 338;		
Bacteriology 121	4	4
Geography 322;		
Math 224	3	3
Earth Science 624, 309	3	3
	17	17

Junior Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Chemistry 221, 222	3	3
Econ. 301, 302	3	3
Physics 225, 226	4	4
Earth Science 330;		
Agric. Engr. 304	3	3
Agric. Engr. 401;		
Math 240	3	3
Plant Science 520	<u>1</u>	<u>1</u>
	17	17

Senior Year

	Fall Semester	Spring Semester
Course and Number	Credit	Credit
Earth Science 616, 626	3	3
Agric. Engr. 524;		
Gen. Forestry 618	3	3
Major Electives	8	5
Crop Science 607	=	<u>3</u>
	14	14

PROGRAM IN AGRICULTURAL BUSINESS

Freshman Year

Course and Number	Fall Semester Credit	Spring Semester Credit
English 101, 102	3	3
History 100, 101	3	3
Botany 140; Zoology 160	4	4
Mathematics 101, 102	3	3
Agricultural Education 101, 102 Air or Military Science or	1	1
(Elective)	1	1
	15	15

Sophomore Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Humanities 200, 201	3	3
Chemistry 101, 102	4	4
Plant Science 110;		
Soil Science 338	3	4
Economics 301;		
Agricultural Economics 330	3	3
Health Education 200;		
Plant Science Seminar 520	. 1	1
Air or Military Science (Elective)	2	2
	16	17

Junior Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Bacteriology 121; Plant Pathology 530	4	4
Agricultural Economics 332; Agricultural Economics 334	3	3
Soil Science 517; Geology 309	3	3
*Electives (Major Area)	7	7
	17	17

Senior Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Entomology 468; Plant Taxonomy 430	4	4
Principles of Accounting I Business Mgr. 305;	3	3
Business Law 451	3	3
*Electives (Major Area)	7	7
	17	17

LANDSCAPE ARCHITECTURE

Landscape Architecture is concerned with quality of land use. It includes analysis of environmental and social factors and recommendations for preservation, design, construction and maintenance of developed land areas. The scope of activities of projects vary from broad, regional landscape planning analysis to detailed site planning.

This curriculum is planned to equip the student to deal with a wide range of environmental problems. A sequence of required courses develops understanding of landscape design theory and practice and construction techniques. Elective and optional course offerings provide the student an opportunity to concentrate in an area of individual interest.

The student majoring in landscape architecture may select one of three optional elective tracks: (1) urban advocacy, (2) regional planning, or (3) office pratice/governmental administration.

The curriculum is a sequence of three levels. After completing the basic level, a review will be scheduled for each student majoring in landscape architecture. The students must have a cumulative grade point average of 2.0 in order to advance to the next level. A Second review and recommendations will

be scheduled after completing the intermediate level. Students who have earned an accumulative average of 3.0 or above may be excused from this review process.

The following curriculum leads to the Bachelor of Science in Landscape

Architecture.

LANDSCAPE ARCHITECTURAL CURRICULUM

Freshman Year

riesillali real
1st Semester
English 100 (Ideas and Their Expression I)
17
2nd Semester
English 101 (Ideas and Their Expression II)
Sophomore Year
1st Semester
Humanities 200 (Survey of the Humanities I) 3 Hort. 202 (Plant Materials 1) 3 Geog. 200 (Principles of Geography) 3 Arch. Engineering 221 (Arch. Graphics I) 3 L.A. 230 (Environmental Ecology) 3 Elective 3 18

2nd Semester

Sociology 100 (Principles of Sociology)	3
Humanities 201 (Survey of the Humanities II)	
Hort. 203 (Plant Materials II)	
Arch. Engineering 222 (Arch. Graphics II)	
Speech Comm. 250 (Speech Communication)	
L.A. 240 (Basic Landscape Design)	

Junior Year

1st Semester

Ag. Engineering 401 (Surveying, Drainage, and Soil Conservation).3L.A. 340 (Landscape Architectural Design I).4L.A. 330 (Landscape Architectural Construction I).4Soil Science 338 (Fundamentals of Soil Science).4Electives.3
18
2nd Semester
Geology 309 (Elements of Geology)
Senior Year
1st Semester
Economics 300 (Principles of Economics) .3 L.A. 440 (Advanced L.A. Design I) .4 Arch. Engineering 566 (City Planning and Urban Design) .4 Electives .5 16
2nd Semester
L. A. 441 (Advanced L.A. Design II) .4 L. A. 410 (Professional Practice) .2 L. A. 400 (Planting Design) .3 L. A. 420 (Seminar) .2 Electives .6 17
OPTIONAL ELECTIVE TRACKS:
Students will be required to elect a minimum of 12 semester hours from one of the optional elective tracks. Five semester hours of free electives are provided under the curriculum. All programs of study shall have the approval of the student's major advisor and the department.
Urban/Advocacy:
Political Science 442 (Municipal Government)

Sociology 313 (The Community)	(3-0)
Regional:	
Geography 650 (Physical Geography I)	(3-0) (1-4) (3-0) (3-0) (3-0) (2-2) (2-2)
Office Practice/Governmental Administration:	
Speech 251 (Public Speaking)3 (Speech 636 (Persuasive Communication)3 (Political Science 443 (Public Administration)3 (Economics 401 (Public Finance)3 (Business Administration 204 (Business Environment)3 (Business Administration 305 (Principles of Management)3 (Business Administration 450 (Business Communication)3 (Business Administration 451 (Principles of Business Law I)3 ((3-0) (3-0) (3-0) (3-0) (3-0) (3-0)

SCHOOL OF ARTS AND SCIENCES





School of Arts and Sciences

Section 7

William DeLauder, Dean Ethel F. Taylor, Assistant Dean

OBJECTIVES

The School of Arts and Sciences introduces the student to many fields of human interests and assists him in acquiring knowledge in the fields of liberal arts. Its primary aim is to provide a liberal and professional education intended to prepare the student to perform in a wide variety of employment situations. In fulfilling its primary purpose the School endeavors to provide opportunities for the student to acquire the knowledge, perceptions, values, and skills needed for personal development and social usefulness. It also strives through its formal curriculum and co-curricular programs to achieve the following objectives:

- 1. To provide courses in general education for all students.
- 2. To provide courses of instruction for in breadth and in depth studies in the humanities, natural sciences and mathematics, and the social sciences.
- To provide an opportunity for the student to acquire the tools or methods with which to gather, analyze, and evaluate information as well as the skills to communicate his thinking to others.
- To provide the opportunity for individual creativity and development through research and other activities which inspire creativity, self-discipline, and self criticism.
- To provide an academic base on which individuals may enter graduate areas of specialization.

DEGREES OFFERED

The School of Arts and Sciences is comprised of thirteen departments and programs offering undergraduate majors leading to the Bachelor of Arts or the Bachelor of Science and a Master's program leading to the Master of Arts or the Master of Science in several fields. The Bachelor of Arts degree is offered with major programs of study in Art, English, French, History, Music, Political Science, Psychology, Sociology and Speech and Theater Arts. The Bachelor of Science degree is offered with major programs of study in Biology, Chemistry, Mathematics, Physics and Social Service. Many degree programs may be pursued jointly with professional education courses (offered in the School of Education). Graduates of these programs qualify for certification to teach in the secondary schools. In addition, the Mathematics and Physics Departments have

joint degree programs with the School of Engineering in Engineering Mathematics and Engineering Physics. Concentrations are available for students interested in journalism, radio, television and speech pathology and audiology.

DEGREE REQUIREMENTS

To attain the baccalaureate degree in the School of Arts and Sciences, a student must satisfactorily complete the requirements of his/her major field, the general education studies and a sufficient number of electives to total 124 credits. The minimum scholastic average required for graduation in any department degree program is a 2.0 average in all major courses in addition to the overall grade point average requirement of 2.0.

ACCREDITATION

Programs in the School of Arts and Sciences that are approved by national accreditation organizations are as follows:

The Department of Chemistry is accredited by the American Chemical Society.

The undergraduate program in Social Service is approved by the Council on Social Work Education.

CAREER OPPORTUNITIES

The curriculum of the School prepares students for careers in teaching, research, social work, journalism, radio or television, the creative arts, industry and government. Within the professional curricula, students may pursue studies which lead to careers in law, medicine, dentistry, librarianship, teaching and the ministry.

SEMESTER LOAD LIMIT

The normal schedule is 15-16 semester hours for a semester, eight per six-week summer session. No student may register for more than 18 semester hours in one semester or eight per six-week summer session, without permission of the Dean.

ACADEMIC ADVISEMENT

To assist students in meeting graduation requirements, a system of student advisement is provided in all departments. Academic advising is essential for assuring the student that the programs of study he is pursuing include the requirements of his/her particular department and desired degree. It assists also in helping students make maximum use of the learning opportunities in the University and in helping them with academic problems to work out solutions to their difficulties.

ADMISSION REQUIREMENTS

Admission requirements for the School of Arts and Sciences are the same as those for the University. Requirements for graduation vary from department to department, so students must be certain to satisfy departmental requirements. Students are responsible for meeting all academic requirements for graduation.

GENERAL PROGRAM REQUIREMENTS

For the student enrolled in this School, an effort is made to afford him or her options and flexibility in educational planning. To achieve this, the School has developed a set of general education requirements from which the student may choose sixteen courses in five fields to complete these requirements. General education requirements should be completed in the first two years in the University.

The courses and fields from which they may be selected are listed below:

I.	English Composition	2 courses required
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11.	Science (natural and physical)	2 courses required
	Chemistry, Biology,	-
	Zoology, Botany, Physics	
	Mathematics	2 courses required

III.	Foreign Languages Spanish, French, German,	2 courses required
	Russian	

IV.	Science (Social & Behavioral)	4 courses required
	Anthropology, Economics	
	Geography, History, Political	
	Science and Sociology	

V.	Humanities	4 courses required
	Art, English, Humanities, Music	•
	Philosophy and Speech	

Certain courses require specific prerequisites, therefore, each student should select courses with this fact in mind.

Certain majors require specific courses, so each student must be knowledgeable about departmental requirements in selecting these courses.

Students planning to enter teaching fields should be knowledgeable of the semester hour requirements.

Students should be aware also that satisfactory advanced placement scores and/or comparable experiential evidence may be used to satisfy some of the requirements for a baccalaureate degree. Students should consult the chair-person of their respective department(s) for information.

COURSE SELECTION LIST—GENERAL EDUCATION REQUIREMENTS

(Sixteen courses may be selected from among the following fields within the limits specified)

English (2 courses-required)
 English 100, Freshman Composition
 English 101, Freshman Composition

II. Sciences (Physical, Biological, Mathematical) (4 courses)

Chemistry 100, Physical Science

Chemistry 101, General Chemistry I

Chemistry 102, General Chemistry II

Biology 100, Biological Science

Botany 140, General Botany

Mathematics 101, Freshman Mathematics I

Mathematics 102, Freshman Mathematics II

Mathematics 111, College Algebra-Trigonometry

Mathematics 113, Analytical Geometry & Calculus

Physics 200, Introduction to Physics

Physics 201, Survey of Physics

Physics 221, General Physics I

Physics 222, General Physics II

Physics 225, College Physics I

Physics 226, College Physics II

Physics 250, Introduction to Astronomy

Zoology 160, General Zoology

III. Foreign Languages (2 courses)

French 100, Elementary French

French 101, Elementary French

French 300, Intermediate French

French 301, Intermediate French

Spanish 104, Elementary Spanish

Spanish 105, Elementary Spanish

Spanish 320, Intermediate Spanish

Spanish 321, Intermediate Spanish

IV. Sciences (Social and Behavioral) (4 courses)

Anthropology 200, Introduction to Anthropology

Economics 301, Principles of Economics I

Economics 302, Principles of Economics II

Geography 200, Principles of Geography

History 100, History of World Civilization

History 101, History of World Civilization

History 204, United States I

History 205, United States II

Political Science 200, American Government and Politics

Sociology 100, Principles of Sociology

The Humanities (4 courses)

Art 225, An Introduction to the History of Art

English 220, English Literature I

English 221, English Literature II

Humanities 200, Survey of Humanities I

Humanities 201, Survey of Humanities II

Music 217, Music Appreciation II

Philosophy 260, Introduction to Philosophy

Philosophy 261, History of Philosophy

Philosophy 262, Logic

Speech 250, Speech Fundamentals

Speech 251, Public Speaking

Dependent upon career choices, students in the School of Arts and Sciences select combination of courses during the first two years as suggested.

Freshman Year

Area	Number of Courses
English Mathematics Physical or Biological Science Social Science Physical Education	2 2 2 2 2 2 2

Sophmore Year

Foreign Languages	2
Humanities	4
Social Science	2

DEPARTMENT OF ART

Leroy F. Holmes, Jr., Chairperson

OBJECTIVES:

The objectives of the Art Department are simple and direct; to guide the students through carefully planned classroom, studio, and working experiences, to develop their aesthetic sensibilities, technical ability and to broaden their general education. This basic preparation lays a foundation for further study, careers as creative artists and art teachers.

DEGREES OFFERED

Art Design - B.A. Art Painting - B.A. Art Education - B.S.

*Art, Secondary Education - M.S.

GENERAL PROGRAM REQUIREMENTS:

The admission of students to the undergraduate program in the Art Department is based upon the general admission requirements of the university.

DEPARTMENTAL REQUIREMENTS:

Art Major - The major in art must complete 124 semester hours of university courses. Included in the 124 semester hours are 40/58 hours of art in courses at the 200 level or above. A minimum grade of "C" must be achieved in these courses.

^{*} See Graduate Bulletin for details.

In the advance studio courses, students may expect to purchase certain materials which are not supplied by the Art Department. These materials may cost from \$5.00 to \$45.00 depending on the course taken by the student.

Teaching major in Art - The teaching major in art must complete a minimum of 124 semester hours of university courses. Included in these 124 hours are thirty semester hours of art courses at the 200 level or above with grades of "C" or better.

ACCREDITATION:

All Teacher Education Programs are accredited by the National Council for Accreditation of Teacher Education and approved by the North Carolina State Department of Public Instruction.

CAREER OPPORTUNITIES:

The programs offered by the Department of Art prepare graduates for such careers as commercial artists, designers, draftsmen, illustraters, free lance artists, directors and supervisors of art agencies, teachers of art, and art supervisors.

Suggested Curriculum Guide for an Art Major

BACHELOR OF ARTS DESIGN OPTION

Freshman Year

1st Semester	2nd Semester
S.H.	S.H.
Art. 100 3	
Art. 224 2	Art. 225 2
English 100 3	English 101 3
Math 101 3	Math 102 3
Behavioral Sciences	Behavioral Science
(Elective)	(Elective)
Personal Hygience 200 2	$\overline{\frac{1}{14}}$
_	
16	

Sophomore Year

1st Semester		2nd Semester	
S	H.		S.H.
Art 226	3	Art 222	. 3
Biological Science	4	Art 227	. 3
Electives	2	Art 229	. 3
Humanities (Elective)	3	Humanities (Elective)	. 3
Behavioral Science		Engineering Graphics 101	. 3
(Elective)	3	Physical Science 100	. 3
Humanities (Elective)	3	Physical Science Lab 110	. 1
			_
	18		19

Junior Year

1st Semester		2nd Semester	
S.I	H.	S.	.H.
Art 400	2	Art 228	3
Art 401			3
Art 459	2	Foreign Language	
Foreign Language		(French or German)	3
(French or German)	3	Humanities (Elective)	3
Behavioral Science (Elective)	3	Electives	3
Electives	3		
			15
	16		

Senior Year

1st Semester	2nd Semester
S.H	I. S.H.
Art 520	2 Art 525 3
	3 Art 526 3
Art 405	3 Art 456 3
Art 406	3 Electives
Art 455	3
1	5

Natural Sciences: 4 courses from Physical, Biological, Mathematical.

Behavioral Science: 4 courses; 12 Semester hours. Humanities: 4 courses, 12 semester hours.

PAINTING OPTION

The Same as Design Option except Art 528 and 529 are substituted for Art 455 and 456.

TEACHING OPTION Freshman Year

1st Semester		2nd Semester	
S	.H.	S.	H.
Art 100	3	Art 101	3
Education 100	1	English 101	3
English 100	3	History 101	3
History 100	3	Mathematics 102	3
Mathematics 101	3	Personal Hygiene 200	2
		Electives	
Electives			_
	_		17

Sophomore Year

1st Semester		2nd Semester	
S.	Н.		S.H.
Art 224	2	Art 225	. 2
Art 226	3	Art 227	. 3
Education 300	2	Education 301	. 2
Foreign Language		Foreign Language	
(French or German)	3	(German or French)	. 3
Humanities 200	3	Humanities 201	. 3
Psychology 320		Electives	. 3
Physical Education	1		_
			16
	17		

Junior Year

1st Semester		2nd Semester	
S.	H.	S	.H.
Art 400	2	Art 229	3
Art 405	3	Art 401	3
Physical Science 100			
Physical Science Lab 110			
Art 600	3	Speech 250	2
Electives	3		
	-		15
	15		

Senior Year

1st Semester	2nd Semester	
S.H.	S.I	Η.
Art 454 3	Education 500	3
Art 459 2		
Art 520 2		
Art 524 3	Education 637	3
Education 436 3	-	_
Electives 3		15
_		

DEPARTMENT OF BIOLOGY

A. James Hicks, Chairperson

OBJECTIVES:

The objectives of the Biology Department are to provide the opportunity for an academic background in the life sciences as a part of the general education for the student population at the University; to prepare students to teach biology; to prepare students to meet basic admission requirements of graduate and professional schools (i.e. medical, dental and veterinary science); to prepare professional biologists; and to provide cognate courses for students majoring in or receiving certification in other fields, including agricultural sciences, home economics, nursing, horticulture, and physical education.

DEGREES OFFERED:

Biology (Preprofessional) - B.S.

Biology, Secondary Education - B.S.

*Biology - M.S.

*Biology, Secondary Education - M.S.

The curricula of the two undergraduate programs listed above are similarly structured in the freshman and sophomore years. The course requirements of the upper level of these programs vary in that each is geared toward its specific goal. Students have the option to complete both the preprofessional and secondary education sequences.

Biology majors may elect to follow a 3-2 (years) curriculum sequence in Physical Therapy, Dental Hygience and Radiologic Science at A & T and UNC-Chapel Hill. Individuals completing these sequences will receive a B.S. in biology from A & T and a B.S. in the selected area from UNC-Chapel Hill. Prospective students should consult the department for additional information.

GENERAL PROGRAM REQUIREMENTS:

The admission of students to the undergraduate degree programs in the Department of Biology is based upon the general admission requirements of the University.

DEPARTMENTAL REQUIREMENTS:

Biology Major - Biology majors are required to complete a minimum of 124 hours for graduation. In the "preprofessional sequence", the student is required to complete a minimum of 39 semester hours of biology and 45 semester hours of supporting courses. The remaining courses satisfy the University's general educational requirements.

Teaching Major in Biology - Majors following the "teacher education sequence" are required to complete a minimum of 129 semester hours of University

^{*} See the Bulletin of the Graduate School

courses. Included in these 129 hours are a minimum of 34 semester hours of biology and 69 semester hours of supporting courses. The remaining courses satisfy the University's general education requirements. A student may also be expected to complete a one semester practicum in the department.

ENRICHMENT PROGRAMS:

Enrichment programs designed to increase the knowledge and competitiveness of biology majors are as follows:

- Departmental Seminars (including the Artis P. Graves Lecture Series).
 Researches from industry, medical institutions, research laboratories and universities deliver talks on current findings on various life science topics.
 Open to all students.
- Health Careers Academic Advancement Program (HCAAP). HCAAP is an academic skills improvement program for persons interested in health careers. Sophomores through seniors may apply. Consult the health careers advisor.
- Minority Access to Research Careers (MARC). The MARC Honors Program is designed to give outstanding students greater research experience.
 Open to juniors and seniors. Stipends available. Consult the MARC Program Coordinator.
- Student Clubs. Biology majors are strongly encouraged to participate in the Biology Club and/or the Health Careers Club. Open to all majors. Consult the respective Club advisors.

ACCREDITATION:

All Teacher Education Programs are accredited by the National Council for Accreditation of Teacher Education and approved by the North Carolina State Department of Public Instruction.

CAREER OPPORTUNITIES:

A degree in the biological sciences provides a background for students preparing for careers in such fields as industry, professional biology, medical, dental and veterinary sciences and the allied health fields (i.e. dental hygiene, physical therapy, radiologic sciences, etc.). Further, the department's curriculum sequences provide the opportunity for students preparing for teacher education in biology, and for those entering graduate programs in the life sciences.

Suggested Curriculum Guide for a Biology Major

Bachelor of Science

1. Preprofessional Sequence

Freshman Year		Sophomore Year	
1st Semester	2nd Semester	1st Semester	2nd Semester
Eng. 100 (3)*	Eng. 101(3)	Chem. 106 (3)	Chem. 107 (3)
Math 111 (4)	Math 113 (4)	Chem. 116 (2)	Chem. 117 (2)
PE 101(1)	PE 102 (1)	Ed 300(2)	Eng. 250 (2)
Hist. 100 (3)	Hist. 101 (3)	Hum 200 (3)	Hum 201 (3)
Bio. 160 (4)	Bio. 140 (4)	Psy. 320 (3)	H.Ed. 200 (2)
		Bio. 260 (4)	Bio. 121 (4)
Junior Year		Senior Year	
Junior	Year	Senior	· Year
Junior	Year 2nd Semester	Senior 1st Semester	· Year 2nd Semester
1st Semester	2nd Semester	1st Semester	2nd Semester
1st Semester Ed 301 (2)	2nd Semester Bio. 466 (3)	1st Semester Physics 225 (3)	2nd Semester Physics 226 (3)
1st Semester Ed 301(2) Chem. 221(3)	2nd Semester Bio. 466 (3) Chem. 222 (3)	1st Semester Physics 225 (3) Physics 235 (1)	2nd Semester Physics 226 (3) Physics 236 (1)
1st Semester Ed 301 (2) Chem. 221 (3) Chem. 223 (2)	2nd Semester Bio. 466 (3) Chem. 222 (3) Chem. 224 (2)	1st Semester Physics 225 (3) Physics 235 (1) Bio. 562 (4)	2nd Semester Physics 226 (3) Physics 236 (1)
1st Semester Ed 301 (2) Chem. 221 (3) Chem. 223 (2) Fr 100 (3) or	2nd Semester Bio. 466 (3) Chem. 222 (3) Chem. 224 (2) Fr 101 (3) or	1st Semester Physics 225 (3) Physics 235 (1) Bio. 562 (4) Bio. 569 (1)	2nd Semester Physics 226 (3) Physics 236 (1) Bio. 568 (1)

2. Teacher Education Sequence

Freshman Year		Sophomore Year	
1st Semester	2nd Semester	1st Semester	2nd Semester
Eng. 100 (3)	Eng. 101(3)	Bio. 260 (4)	Bio. 121 (4)
Math 111 (4)	Math 113 (4)	Chem. 106 (3)	Chem. 107 (3)
PE 101(1)	H.Ed. 200 (2)	Chem. 116(2)	Chem. 117 (3)
Hist. 100 (3)	Hist. 101 (3)	Ed 300(2)	Ed 301 (2)
Bio. 160 (4)	Bio. 140 (4)	Hum 200 (3)	Hum 201 (3)
		Psy. 320 (3)	Eng. 250 (2)
		PE 102(1)	

^{*} Denotes Credit Hours

Junior	Year	Senior	Year
1st Semester	2nd Semester	1st Semester	2nd Semester
Chem. 221(3)	Bio. 400 (3)	Psy. 436 (3)	Ed 500 (3)
Chem. 223 (2)	Bio. 466 (3)	Bio. 561 (4)	Ed 535 (3)
Ed 400 (3)		Bio. 562 (4)	Ed 560 (6)
Fr 100 (3) or	Fr 101 (3) or	Bio. 568 (1)	
Ger 102 (3)	Ger 103 (3)	Bio. Elec. (3)	
Physics 225 (3)	Physics 226 (3)	Ed 637 (3)	
Physics 235 (1)	Physics 236 (1)		
Electives (3)	Electives (3)		

DEPARTMENT OF CHEMISTRY

Walter Wright, Acting Chairperson

OBJECTIVES:

The objectives of the Chemistry Department are:

- To prepare chemistry majors for graduate study in chemistry or other chemistry-based sciences;
- To prepare majors for admittance to medical, dental, and other professional schools;
- 3. To prepare majors for careers as professional chemists;
- 4. To prepare majors to teach chemistry at the secondary school level;
- 5. To provide majors in other departments with a functional understanding of chemistry commensurate with the needs of their chosen field;
- 6. To provide all students served by the department with an insight into the nature of scientific investigations and the scientific enterprise in general;
- 7. To offer for graduate students learning experiences and research leading to a M.S. in Chemistry;
- 8. To offer learning experiences and research leading to a M.S. in education with a concentration in chemistry;
- To share the resources (human and physical) of the department with the local and academic community through cooperative programs, workshops, seminars, course offerings, etc;
- To contribute to the extension of basic knowledge in chemistry and related sciences through applied and basic research, educational experimentation, publications, etc.

DEGREES OFFERED:

Chemistry - B.S.

Chemistry, Secondary Education - B.S.

*Chemistry - M.S.

*Chemistry, Secondary Education - M.S.

GENERAL PROGRAM REQUIREMENTS:

The admission of students to the undergraduate degree programs in the Department of Chemistry is based upon the general admission requirements of the University.

DEPARTMENTAL REQUIREMENTS:

Chemistry Major - The professional major in chemistry must complete 124 semester hours of University courses. The student may select one of two options in order to complete the professional major. The options are: The American Chemical Society (ACS) Certified Program or the Pre-Health Program. The ACS Program requires that the student complete 44 semester hours in basic chemistry courses and six to eight hours in advanced chemistry courses. The Pre-Health Program requires the student to complete 44 semester hours in basic chemistry courses and 16 semester hours of basic biology courses. A minimum grade of "C" must be achieved in all basic chemistry courses.

Teaching Major in Chemistry - The teaching major in chemistry must complete a minimum of 124 semester hours of University courses. Included in these 124 hours are 41 semester hours of basic chemistry courses. A minimum grade of "C" must be achieved in all basic chemistry courses.

ACCREDITATION:

The professional curriculum (ACS Certified Program) is accredited by the American Chemical Society. All Teacher Education Programs are accredited by the National Council for Accreditation of Teacher Education and approved by the North Carolina State Department of Public Instruction.

CAREER OPPORTUNITIES:

B.S. level graduates in chemistry qualify for employment in many fields. There are many career opportunities for chemists in education, government, and industry.

In industry, the chemistry graduate with a B.S. degree may be employed in manufacturing-plant management, research and development, product development, technical sales, marketing, etc. B.S. level chemists work in research at federal, state, municipal, and university laboratories.

The B.S. degree program prepares students to pursue graduate study in chemistry or other chemistry-based sciences (biochemistry, pharmacology, physiology, chemical physics, material science, etc.), medicine, dentistry, and other health professional areas.

^{*}See the Bulletin of the Gradate School

SUGGESTED CURRICULUM GUIDE FOR PROFESSIONAL MAJORS IN CHEMISTRY BACHELOR OF SCIENCE

A. Professional Curriculum (ACS Certified)

Freshman Year

1st Semester	Credit	2nd Semester	Credit
Chemistry 106	3	Chemistry 107	3
Chemistry 108	1	Chemistry 117	2
Chemistry 116	2	English 101	3
English 100	3	History 101	3
History 100	3	Mathematics 116	5
Mathematics 110	4	*Physical Education	1
*Physical Education	1	•	_
			17
	17		

^{*}Health Education 200 may be substituted for the two courses in Physical Education.

Sophomore Year

1st Semester	Credit	2nd Semester	Credit
Chemistry 221	3	Chemistry 222	3
Chemistry 223	2	Chemistry 231	3
Mathematics 117	5	Chemistry 232	2
Physics 221	3	Physics 222	3
Physics 231	2	Physics 232	2
German 102 or	3	German 103 or	3
Russian 106	-	Russian 107	
	18		16

Junior Year

1st Semester	Credit	2nd Semester	Credit
Chemistry 441	3	Chemistry 442	3
Chemistry 224	2	Chemistry 443	1
Mathematics 300	4	Chemistry 511	3
Humanities 200	3	Humanities 201	3
Zoology 160	4	*Botany 140	4
	_	Elective	3
	16		
			17

^{*}A biology course for which Zoology 160 is a prerequisitive may be substituted for Botany 140.

Senior Year

1st Semester	Credit	2nd Semester	Credit
Chemistry 431 Chemistry 432 Chemistry 444 Chemistry 545 * Adv. Chem. Elective Elective	3 2 1 3 3-4 3 15-16	* Adv. Chem. Elective Electives	3-5 9 12-14

^{*}To be selected from Chemistry 610, 611, 621, 624, 631, 641, 643, 651, and 503 or 504.

B. Professional Curriculum (Pre-Health)

The program is the same during the first two years as that of the ACS Certified Curriculum.

Junior Year

1st Semester	Credit	2nd Semester	Credit
Chemistry 441	3	Chemistry 442	3
Chemistry 224	2	Chemistry 443	1
Zoology 160	4	Chemistry 511	3
Humanities 200	3	Zoology 260	4
Electives	3	Humanities 201	3
		Electives	3
	15		
			17

Senior Year

1st Semester	Credit	2nd Semester	Credit
Chemistry 431	3	Physiology 562	4
Chemistry 432	2	Electives	8
Chemistry 444	1	•	
Chemistry 545	3		12
Zoology 561	4		
Electives	3		
	16		

SUGGESTED CURRICULUM GUIDE FOR A TEACHING MAJOR IN CHEMISTRY BACHELOR OF SCIENCE

The program is the same during the first two years as that of the professional curriculum except Personal Hygiene (P.E. 200) is required.

Junior Year

1st Semester	Credit	2nd Semester	Credit
Chemistry 441	3	Chemistry 442	3
Chemistry 224	2	Chemistry 443	1
Mathematics 300	4	Chemistry 511	3
Zoology 160	4	*Botany 140	4
Education 300	2	Education 301	2
Humanities 200	3	Speech 250	2
	_	Humanities 201	3
	18		
			18

^{*}A biology course for which Zoology 160 is a prerequisite may be substituted for Botany 140.

Senior Year

1st Semester	Credit	2nd Semester	Credit
Chemistry 431	3	Education 500	3
Chemistry 432	2	Education 535	3
Chemistry 444	1	Education 560	6
Education 400	3		
Education 436	3		12
Psychology 320	3		
Earth Science 309	3		
	18		

DEPARTMENT OF ENGLISH

Jimmy L. Williams, I, Chairperson

OBJECTIVES:

The objectives of the English Department are: to provide instruction in reading and writing skills, the humanities, journalism, linguistics and literature; to prepare English majors and minors to teach, to pursue graduate training in English and other professions; and to prepare students for entry level positions and graduate study in journalism.

DEGREES OFFERED:

English, Professional—B.A.

English, Journalism Concentration—B.A.

English, Secondary Education—B.S.

*English, Secondary Education—M.S.

*English and Afro-American Literature-M.A.

GENERAL PROGRAM REQUIREMENTS:

The admission of students to the undergraduate programs in the Department of English is based upon the general admission requirements of the University.

DEPARTMENTAL REQUIREMENTS:

Professional English Major and English Major with Journalism Concentration—The professional English major must complete 125 semester hours of University courses. Included in the 125 semester hours are 42 hours of English at the 200 level or above for the professional major. Included in the 124 semester hours for persons concentrating in journalism are 47 semester hours of English at the 200 level or above. A minimum grade of "C" must be achieved in these courses.

Teaching Major in English—The teaching major in English must complete a minimum of 125 semester hours of University courses. Included in these 125 hours are 44 semester hours of English courses at the 200 level or above with grades of "C" or better.

The Minor in English (teaching and non-teaching)—Students desiring a minor in English must complete 24 semester hours in English at the 200-level or above. The courses are English 210, 220, 221, 300, 410, 430, 431, and 450.

ACCREDITATION:

All Teacher Education Programs are accredited by the National Council for Accreditation of Teacher Education and approved by the North Carolina State Department of Public Instruction.

CAREER OPPORTUNITIES:

A degree in English prepares students to teach, to conduct research, to pursue graduate and professional degrees (such as law and library science), and to work in government, media, business (e.g. service representatives, public relations and information directors), editing and numerous other jobs requiring mastery of the language.

^{*}See the Bulletin of the Graduate School.

SUGGESTED CURRICULUM GUIDE FOR PROFESSIONAL ENGLISH MAJORS BACHELOR OF ARTS

Freshman Year

		1st Sem.	2nd Sem.
		Cr. Hrs.	Cr. Hrs.
English 100, 101	Ideas and Their Expression I & II	3	3
*Math 101, 102	Freshman Mathematics	3	3
Soc. Sci. 100, 101	History of Western Civ.	3	3
Bio. Sci. 100 Phy. Sci. 100, 110	Biological Science Physical Science	4	4
P.E. 101, 102	Fund. Phy. Ed. (Men & Women)	1	1
English 102	Developmental Reading	2	_
English 210	(Either Semester) Intro. to Literary Studies		2
English 210	intio. to Literary Studies	16	$\frac{3}{17}$
		16	1/
	Sophomore Year		
**Foreign Language	Intermediate Foreign Language	3	3
Humanities 200, 201	Survey of Humanities I and II	3	3
Speech 250	Voice and Speech Fund.	2	3
English 220, 221 Psy. 320	English Literature I and II General Psychology	3	3
Electives	General 1 sychology	3	- 6
		3 2 3 3 3 17	15
	Junior Year		
	Junior Year		
English 300	Advanced Composition	3	-
English 500	Literary Research	3	- 2
English 501 English 401	Intro. to Hist. of Eng. Lang. Survey of Drama II	-	3
English 430, 431	American Literature I and II	3	3 3 3 6
Electives		3 3 3	6
English Elective		3	15
		15	

^{*}Students having to take Math. 100 (a remedial course) still must complete Math. 101 & 102 or their equivalent.

^{**}French, Spanish, German, or Russian through Intermediate level.

1st Sem. 2nd Sem.

Senior Year

English 450	Advanced Grammar	3	-
English 410	Shakespeare	-	3
English 435	The Novel	3	-
English 436	Modern Poetry	3	-
Electives	·	6	12
		15	15

SUGGESTED CURRICULUM GUIDE FOR PROFESSIONAL ENGLISH MAJORS WITH A CONCENTRATION IN JOUNNALISM BACHELOR OF ARTS

Freshman Year

		Cr. Hrs.	Cr. Hrs.
English 100, 101	Ideas and Their Expression I & II	3	3
*Math 101, 102	Freshman Mathematics	3	3
Soc. Sci. 100, 101	History of Western Civ.	3	3
Bio. Sci. 100	Biological Science	4	-
Phy. Sci. 100, 110	Physical Science	-	4
P.E. 101, 102	Fund. Phy. Ed. (Men & Women)	1	1
English 102	Developmental Reading (Either Semester)	2	-
English 155	Intro. to Communication Theory		3
		16	17

Sophomore Year

**Foreign Language	Intermediate Foreign Language	3	3
Humanities 200, 201	Survey of Humanities I and II	3	3
Speech 250	Voice and Speech Fund.	-	2
English 220, 221	English Literature I and II	3	3
Psy. 320	General Psychology	3	-
English 225	Newswriting	3	_
English 230	News Editing and Layout	-	3
English 210	Intro. to Literary Studies	3	-
Electives	,	-	3
		18	17

^{*}Students having to take Math. 100 (a remedial course) still must complete Math. 101 & 102 or their equivalent.

^{**}French, Spanish, German, or Russian through Intermediate level.

Junior Year

English 300 English 430, 431 English 330 English 231 English 331 Electives	Advanced Composition American Literature I and II Feature Writing Introduction of Communication Theory Writing for Sci. and Technology	3 3 - 3 - 3 15	3 3 6 15
	Senior Year		

Soc. 100 Principles of Soc. (6)	Optional) 3	-
Pol. Sci. 230 Intro. to Pol. Sci. ((Optional) 3	-
English 462 Current Issues in M	Mass Comm. 2	-
English 470 Media Internship	-	6
English 464 Public Information	and Public	
Relations Techn	iques 3	-
Electives	3	6
	14	12

SUGGESTED CURRICULUM GUIDE FOR A TEACHING MAJOR IN ENGLISH

BACHELOR OF SCIENCE

Freshman Year

			2nd Sem. Cr. Hrs.
English 100, 101	Ideas and Their Expression I & II	3	3
*Math 101, 102	Freshman Mathematics	3	3
Soc. Sci. 100, 101	History of Western Civ.	3	3
Bio. Sci. 100	Biological Science	4	-
Phy. Sci. 100&110	Physical Science	-	4
P.E. 101, 102	Fund. of P.E.	1	1
English 102	Developmental Reading (First Semester)	2	-
English 210	Intro. to Literary Theory	_	3
		16	17

^{*}Students having to take Math. 100 (a remedial course) still must complete Math. 101 & 102 or their equivalent.

Sophomore Year

*	*Foreign Language Humanities 200, 201 Speech 250 Psychology 320 Education 300 English 425 Electives	English Literature I and II Intermediate Foreign Language Survey of Humanities I and II Voice and Speech Fund. General Psychology Introduction to Education World Literature	3 3 3 - 3 - 3 15	3 3 2 - 2 3 - 16
		Junior Year		
	English 430, 431 English 300 English 501 English 410	American Literature I and II Advanced Composition Intro. to Hist. of Eng. Language Shakespeare	3 3 -	3 3 3
	English 436 or 435 Education 301	Modern Poetry or The Novel Phil. & Socio. Found. of	3	-
	Education 400	Education Psychological Found. of	2	-
	English 401 English 627 Electives	Education Survey of Drama II Adolescent Literature	3 3 17	3 3 - - 15
		Senior Year		
	English 450 English 500 English 510 Education 436 Education 500 Education 526 Education 560 Education 637	Advanced Grammar Literary Research Reading Skills Tests and Measurements Principles and Curricula of Secondary Schools Methods of Teaching English Observation and Student Teaching Teaching Reading in the Secondary School	3 3 2 3 -	3 3 6
	Electives		$\frac{3}{17}$	12

^{**}Acceptable courses: French 300, 301; Spanish 320, 321; German 422, 423. Eligibility to enroll in any one of these is established by placement test or by successful completion of elementary level of appropriate language.

DEPARTMENT OF FOREIGN LANGUAGES

Helen G. LeBlanc, Chairperson

OBJECTIVES:

The objectives of the Foreign Language Department are to (1) develop facility in the listening, speaking, reading and writing of the foreign languages; (2) develop a better knowledge of the foreign cultures and an appreciable awareness of one's own culture; (3) create a spirit of international understanding that will result in respectable attitudes toward individuals and national groups; (4) prepare students as teachers of foreign languages for employment in secondary schools; (5) prepare and encourage students to continue further study and research in the major areas, foreign language literature and education; (6) provide students with experiences to develop communicative skills and competence requisite for personal fulfillment and challenging careers in which the foreign language study will be in full use or an asset.

DEGREES OFFERED:

French - B.A. French, Education - B.S.

GENERAL PROGRAM REQUIREMENTS:

The admission of students to the undergraduate degree programs in the Department of Foreign Languages is based upon the general admission requirements of the University.

DEPARTMENTAL REQUIREMENTS:

French - B.A. (Non-Teaching Major) - The curriculum in this area requires the student to complete a minimum of 124 semester hours of University courses. Included in the 124 hours are 36 semester hours of French in courses beyond the elementary level.

French - B.S. (Teaching Major) - The curriculum for the teaching major in French requires that a student complete the courses and regulations as outlined by the Department of Education for certification at the secondary school level. A student must complete a minimum of 124 semester hours of University courses. Included in the 124 hours are 36 semester hours of French in courses beyond the elementary level.

Students who have completed one unit of language in high school or who have no knowledge of a foreign language are to enroll in an elementary language course. For those students presenting two units or more of high school credits, French 300, and French 301, or Spanish 320 and Spanish 321 are required.

A minor may be achieved in French and Spanish by students who complete a minimum of 21 semester hours in Spanish and 24 hours in French.

ACCREDITATION:

All Teacher Education Programs are accredited by the National Council for Accreditation of Teacher Education and approved by the North Carolina State Department of Public Instruction.

CAREER OPPORTUNITIES:

In this time of growing internationalism, a degree in foreign languages has a high level of importance in many professional careers. For the language major, chances of employment in areas as government service, military service, teaching, international travel, law, business, industry and mass communications, to name but a few, are greatly enhanced by the training in foreign languages.

CURRICULUM GUIDE FOR FRENCH, NON-TEACHING MAJORS

Freshman Year

1st Semester	Cr. Hrs.	2nd Semester	Cr. Hrs.
English 100	3	English 101	3
Mathematics 101	3	Mathematics 102	3
Social Science 100	3	Social Science 101	3
Biological Science 100	4	Physical Science 100	4
French 300	3	French 301	3
	16		16

Sophomore Year

1st Semester	Cr. Hrs.	2nd Semester	Cr. Hrs.
Speech 250 Humanities 200 French 410 French 415	2 3 3 3	Humanities 201 French 411 French 416 Spanish 105	3 3 3 3
Psychology 320 Spanish 104	$\frac{3}{3}$	Physical Education 200 Elective or Minor	$\frac{2}{3}$

Junior Year

1st Semester	Cr. Hrs.	2nd Semester	Cr. Hrs.
French 400	3	French 417	3
French 505*	3	French 506*	3
Spanish 320	3	Spanish 321	3
Geography 210	3	Electives or Minor	6
Elective or Minor	3		
	_		15
	15		

^{*}Either French 505 or French 506 may be taken, only one course is required.

Senior Year

1st Semester	Cr. Hrs.	2nd Semester	Cr. Hrs.
French 508 French Elective German 102 Electives or Minor	3 3 3 6	French Electives German 103 Electives or Minor	6 3 6
	15		15

Minimum Total Hours Required 124 Minimum Total French Hours Required 36

CURRICULUM GUIDE FOR FRENCH, TEACHING MAJORS

Freshman Year

1st Semester	Cr. Hrs.	2nd Semester	Cr. Hrs.
English 100	3	English 101	3
Mathematics 101	3	Mathematics 102	3
Social Science 100	3	Social Science 101	3
Biological Science 100	4	Physical Science 100	4
French 300	_3	French 301	_3
	16		16

Sophomore Year

1st Semester	Cr. Hrs.	2nd Semester	Cr. Hrs.
Speech 250	2	Humanities 201	3
Humanities 200	3	French 411	3
French 410	3	French 416	3
French 415	3	Education 300	2
Psychology 320	3	Physical Education 200	2
Spanish 104	3	Spanish 105	3
•	17	•	16

Junior Year

1st Semester	Cr. Hrs.	2nd Semester	Cr. Hrs.
French 400	3	French 417	3
French 505*	3	French 506*	3
Education 301	2	Education 400	3
Geography 210	3	Spanish 321	3
Spanish 320	3	Elective	3
Elective	3		_
			15
	17		

Senior Year

1st Semester	Cr. Hrs.	2nd Semester	Cr. Hrs.
French 508	3	Education 500	3
Education 436	3	Education 527	3
Education 637	3	Education 560	6
French Elective	3		
Elective	3		12
	15		

Minimum Total Hours Required 124 Minimum Total French Hours Required 36

DEPARTMENT OF HISTORY

Frank C. Bell, Chairperson

OBJECTIVES:

The Department is organized to help students develop the abilities for analysis and critical judgment in dealing with matters of an historical nature. It aims further to encourage students to express themselves in constructive and meaningful ways as members of the society in which they live.

The specific objectives of the History Department are as follows: 1) to contribute to the general education of students by providing historical, geo-

^{*}Either French 505 or French 506 may be taken, only one course is required.

graphical, and philosophical background for the study of the arts, sciences and technical studies; 2) to provide historical content for students preparing for careers in fields such as education, law, religion, social service, journalism, history, and government service; 3) to provide a course of study leading to the Baccalaureate degree in history and/or social sciences; 4) to provide a course of study leading to the Master of Science degree in education with a concentration in history and/or social sciences, and provide graduate education for career historians for entrance in doctoral programs.

A system of student advisement is available to all students in the Department. It is imperative that all students make use of the assistance of the faculty advisors, especially in planning their educational program.

DEGREES OFFERED:

History - B.A.

History, Secondary Education - B.S.

Social Science, Education - B.S.

*History, Secondary Education - M.S.

*Social Science, Secondary Education - M.S.

GENERAL PROGRAM REQUIREMENTS:

The admission of students to the undergraduate degree programs in the Department of History is based upon the general admission requirements of the University. The admission to the graduate program is the baccalaureate degree from an accredited institution.

DEPARTMENTAL REQUIREMENTS:

HISTORY MAJOR

The major in history must complete 124 semester hours of University courses. Included in the 124 semester hours are 30 hours in history courses at the 200 level or above and 18 hours in the social sciences. A minimum grade of "C" must be achieved in these history and social science courses.

COURSE REQUIREMENTS

	Credit Hours
Biological Science 100 and	
Physical Science 100	8
History 100, 101 (General Education courses)	6
English 100, 101, 102	8
Mathematics 101, 102	6
Physical Education or Health Education	2
History 204, 205, 250, 303, 304	15
Economics 300, 301	
Political Science 200	
Anthropology 200 or Geography 200 or 210	
Sociology 100	15

^{*} See the Bulletin of the Graduate School.

Economics 305 or Sociology 302 (Statistics)	3
Foreign Language	12
Philosophy 261 or 262	3
Psychology 320	3
Humanities 200, 201	6
Speech 250	2
History electives (200 level or above)	15
Electives or Minor	20
	124

TEACHING MAJOR IN HISTORY

The teaching major in history must complete a minimum of 124 semester hours of University courses. Included in the 124 semester hours are 30 hours in history courses at the 200 level or above and 18 hours in the social sciences. A minimum grade of "C" must be achieved in these history and social science courses.

COURSE REQUIREMENTS

	Credit Hours
Biological Sience 100 and	
Physical Science 100	8
English 100, 101, 102	8
Physical Education or Health Education	2
Mathematics 101, 102	6
Psychology 320	3 2
Speech 250	2
History 100, 101 (General Education courses)	6
Foreign Language	6
Humanities 200, 201	6
History 204, 205, 250, 303, 304	15
Economics 300, 301	
Political Science 200 or 210	
Geography 200 or 210 or Sociology 100	18
or Anthropology	
Social Science electives	
Philosophy 261 or 262	3
Education 300, 301, 400, 436, 500,	
536, 560, 637	25
History electives (200 level or above)	15
General elective	1
	124

TEACHING MAJOR IN SOCIAL SCIENCES

The teaching major in social sciences is an interdisciplinary sequence of study. Students pursuing this program must complete 124 semester hours of University courses. Included in the 124 hours are 45 hours in the social sciences with a grade of "C" or better.

COURSE REQUIREMENTS

	Credit Hours
Biological Science 100 and	
Physical Science 100	8
English 100, 101, 102	8
Mathematics 101, 102	6
Physical Education or Health Education	2
Speech 250	2
Humanities 200, 201	6
Foreign Language	6
History 100, 101 (General Education courses)	6
Psychology 320	3
History 204, 205, 250, 303, 304	15
History electives (200 level or above)	6
Political Science 200 or 210 or 333	
or 440 or 542	
Economics 300, 301	
Geography 200, or 210 or Anthropology	12
200 or Sociology 100	
Education 300, 301, 400, 436, 500,	25
536, 560, 637	
Social Science electives	12
General electives	7
	124
or 440 or 542 Economics 300, 301 Geography 200, or 210 or Anthropology 200 or Sociology 100 Education 300, 301, 400, 436, 500, 536, 560, 637 Social Science electives	25 12

THE MINOR IN HISTORY

Students desiring to minor in history must complete 18 semester hours in history at the 200 level or above including History 204, 205, 303 and 304.

ACCREDITATION:

All teachers education programs are accredited by the national council for the accreditation of teacher education and are approved by the State Department of Public Instruction.

CAREER OPPORTUNITIES:

The program for history majors is designed to provide basic educational preparation for students interested in careers as historians or in related fields. These students are prepared to continue in graduate and professional school programs.

The progams for teacher preparation are designed for those students who desire careers as teachers in history or social sciences in secondary schools.

A SUGGESTED PROGRAM FOR HISTORY MAJORS

Freshman Year

1st Semester	Cr. Hrs.	2nd Semester	Cr. Hrs.
Biol. Sci. 100 or Chem. 10	00 4	Biol. Sci. 100 or Chem. 100	0 4
English 100	3	English 101	3
Math 101	3	Math 102	3
History 100	3	History 101	3
Phy. Ed. or Health Ed.	1-2	Phy. Ed. or Health Ed.	1-2
English 102	2	Speech 250	2
	16-17		16-17
	Sophom	ore Year	
1st Semester	Cr. Hrs.	2nd Semester	Cr. Hrs.
History 250	3	Political Science 200 or 210) 3
Foreign Language	3	Foreign Language	3
Humanities 200	3	Humanities 201	3
History 204	3	History 205	3
Phil. 261 or 262	3	Social Science elective	3
Psychology 320	3		
,			15
	18		15
	Junio	r Year	
1st Semester	Cr. Hrs.	2nd Semester	Cr. Hrs.
History 303	3	History 304	3
History elective	3	History elective	3
Foreign Language	3	Foreign Language	3
Economics 300	3	Economics 301	3
Geography, Sociology or	3	History elective	3
Anthropology		,	
	15		15
	Cania	- Vaar	
		r Year	
1st Semester	Cr. Hrs.	2nd Semester	Cr. Hrs.
History elective	3		
History elective	3	Electives or minor	15
Economics 305 3			
Elective or minor	3		
Elective or minor	3		
	15		15

SUGGESTED PROGRAM FOR THE MAJOR IN SOCIAL SCIENCES

Freshman Year

1st Semester	Cr. Hrs.	2nd Semester	Cr. Hrs.
Biol. Sci. 100 or Chem. 10	00 4	Biol. Sci. 100 or Chem. 100) 4
English 100	3	English 101	3
Math 101	3	Math 102	3
History 100	3	History 101	3
Phy. Ed. or Health Ed.	1-2	Phy. Ed. or Health Ed.	1-2
English 102	2	Speech 250	2
	16-17		16-17

Sophomore Year

1st Semester	Cr. Hrs.	2nd Semester	Cr. Hrs.
Sociology 100 or Anthropol	ogy 3	Political Science 200 or 210	3
Education 300	2	Education 301	2
Foreign Language	3	Foreign Language	3
Humanities 200	3	Humanities 201	3
History 204	3	History 205	3
History 250	3	Social Science elective	3
	17		17

Junior Year

1st Semester	Cr. Hrs.	2nd Semester	Cr. Hrs.
History 303	3	History 304	3
Psychology 320	3	History elective	3
Education 400	3	•	
Economics	3	Economics 301	3
Social Science elective	3	Education 436	3
		Free elective	3
	15		15

1st Semester	Cr. Hrs.	2nd Semester	Cr. Hrs.
History elective Social Science elective Social Science elective Education 536 Free elective	3 3 3 3 4	Education 500, 536, 560 637	15
	13		15

A SUGGESTED PROGRAM FOR TEACHING MAJOR IN HISTORY

Freshman Year

1st Semester	Cr. Hrs.	2nd Semester	Cr. Hrs.
Biol. Sci. 100 or Chem. 100 English 100 Math 101 History 100 Phy. Ed. or Health Ed. English 102	3 3 3 1-2 2	Biol. Sci. 100 or Chem. 10 English 101 Math 102 History 101 Phy. Ed. or Health Ed. Speech 250	00 4 3 3 3 1-2 2
	16-17		16-17

Sophomore Year

1st Semester	Cr. Hrs.	2nd Semester:	Cr. Hrs.
Sociology 100 or Anthropolo	ogy 3	Philosophy 261 or 262	3
Education 300	2	Education 301	2
Foreign Lanuage	3	Foreign Language	3
Humanities 200	3	Humanities 201	3
History 204	3	History 205	3
History 250	3	Political Science 200 or 210	3
	17		17

Junior Year

1st Semester	Cr. Hrs.	2nd Semester	Cr. Hrs.
History 303	3	History 304	3
History elective	3	Psychology 320	3
Education 400	3	Education 436	3
Economics 300	3	Economics 301	3
Social Science elective	3	History elective	3
	15		15

1st Semester	Cr. Hrs.	2nd Semester	Cr. Hrs.
History elective	3	Education 500	3
History elective	3	Education 536	3
Social Science elective	3	Education 560	6
History elective	3	Education 637	3
	12		15

DEPARTMENT OF MATHEMATICS

Wendell P. Jones, Chairperson

OBJECTIVES:

The objectives of the Department of Mathematics are consistent with the purpose and philosophy of the University. The Department provides mathematical training that will help students served by it to meet the demands of a democratic and complex society. In addition, the Department offers programs of study in mathematical sciences from which graduates can emerge who possess high degrees of mathematical skill and who have sufficient training in related areas that they will be able to cope in diverse mathematical environments.

Specifically, the Department seeks through its program offerings to:

- Prepare students for graduate study in applied mathematics, professional education and other areas requiring strong undergraduate preparation in mathematics.
- 2. Prepare students for service in industry and government.
- Prepare students for independent investigation in the areas of science and mathematics.
- Imbue students with the desire for continued growth in areas of mathematical inquiry.
- Produce teachers of mathematics who are capable of presenting mathematics in a modern, meaningful and stimulating manner at the secondary level.
- Produce teachers who are capable of providing competent counseling related to trends in the job market and opportunities available in mathematics.
- Develop in prospective teachers of mathematics an appreciation for mathematics as a tool and as an art, the treatment of which requires varying degrees of rigor.
- 8. Develop in prospective teachers an understanding of and an appreciation for the evolution of mathematics from antiquity to the present.

DEGREES OFFERED:

Engineering Mathematics* - B.S. Mathematics - B.S. Mathematics, Secondary Education - B.S.

^{*}Offered in cooperation with the School of Engineering.

GENERAL PROGRAM REQUIREMENTS:

Admission, retention and graduation requirements for students enrolled in degree programs in the Department of Mathematics are based upon the general admission, retention and graduation requirements of the University.

SPECIFIC PROGRAM REQUIREMENTS:

ENGINEERING MATHEMATICS

The required mathematics courses in the Engineering Mathematics program are Mathematics 116, 117, 224, 240, 300, 350, 440, 500, 507, 508, 511, 512, and 520.

Other requirements include Physics 221, 222, 231, 400, 406 and 600; Chemistry 101, 111, 102 and 112; English 100, 101 and 250; Mechanical Engineering 101, 102, 441 and 442; History 100 and 101; Humanities 200 and 201; Health Education 200; Economics 300 and 301; and, six hours of French, German or Russian.

A minimum of 140 hours must be completed for the B.S. degree in Engineering Mathematics.

MATHEMATICS

The required mathematics courses in the Mathematics program are Mathematics 111, 113, 221, 222, 242, 350, 505, 507, 511 and 508 or 512. In addition, 12 hours in courses numbered above Mathematics 507 are required.

Other required courses include Physics 221, 231, 222, 232 and 406; Chemistry 101, 111, 102 and 112; English 100, 101 and 250; Education 100; Health Education 200; Social Science 100 and 101, or History 100 and 101 and Humanities 200 and 201. Six hours of a foreign language (French, German or Russian) are also required. A minimum of 124 hours must be completed for the B.S. degree in Mathematics.

MATHEMATICS, SECONDARY EDUCATION

The required mathematics courses in the Mathematics Education program are Mathematics 111, 113, 221, 222, 224, 240, 242, 350, 505, 507 and 511. In addition, 3 hours in courses numbered above Mathematics 507 are required.

Other requirements include Physics 225, 235, 226, and 236; eight hours of a science sequence (Chemistry 101, 111, 102 and 112; or Botany 140 and Zoology 160; or Biological Science 100 and Physical Science 100); English 100, 101 and 250; two hours of Physical Education; Education 100, 300, 301, 400, 500, 529, 560 and 637; Health Education 200; Psychology 320 and 436; Social Science 100 and 101, or History 100 and 101; six hours of French, German or Russian; and Humanities 200 and 201.

A minimum of 124 hours must be completed for the B.S. degree in Mathematics Education.

ACCREDITATION:

All Teacher Education Programs are accredited by the National Council for Accreditation of Teacher Education and are approved by the North Carolina Department of Public Instruction.

CAREER OPPORTUNITIES:

Graduates of the three programs in the Department have been, and are expected to be, employed in such fields as education, government service, computing, public health and cost analysis.

THE ENGINEERING MATHEMATICS PROGRAM*

Suggested Schedule of Courses

Freshman Year

	Sem	iester
	Fall	Spring
Course and Number	Credit	Credit
Mathematics 116, 117	5	5
Chemistry 101, 102	3	3
Chemistry 111, 112	1	1
English 100, 101	3	3
Mechanical Engineering	3	3
Electives or Air or		
Military Science	1	1
	16	16
Sophomore Ye		10
·		
Mathematics 300, 500	4	4
Mathematics 240, 440	3	3
Physics 221, 222	3	3
Physics 231, 232	3 2 3	3 3 2 3 2
History 100, 101	3	3
Health Education 200	-	2
Electives or Air or		
Military Science	2	2
1	17	19
Junior Year		-,
N. 1	2	2
Mathematics 511, 512	3	3 3
Mathematics 507, 508	3	3 4
Mechanical Engineering 441, 442	3 2	
English 250		- 2
Physics 406	2	2
Humanities 200, 201 Electives	3	3 3 3
Electives		
	17	19

^{*}Offered in cooperation with the School of Engineering.

Senior Year

Physics 400, 600	3	3
Mathematics 224, Electives	3	3
Mathematics 350, 520	3	3
Economics 300, 301	3	3
Foreign Languages (French or German)	3	3
Electives	_3	_3
	18	18

THE MATHEMATICS PROGRAM

Suggested Schedule of Courses

Freshman Year

	Sem	ester
	Fall	Spring
Course and Number	Credit	Credit
Mathematics 111, 113	4	4
Chemistry 101, 102	3	3
Chemistry 111, 112	1	1
English 100, 101	3	3
Social Science 100, 101,	3	3 3
Education 100	1	_
	15	14
	15	14
Sophomore Ye	ar	
Mathematics 221, 222	4	4
Mathematics 242, 350	3	3
Physics 221, 222	3 2	3 2
Physics 231, 232		2
Humanities 200, 201	3	3
English 250, Health		
Education 200	2	2
	17	17
Junior Year	-,	
Mathematics 507	3	-
Physics 406	-	3
Foreign Langue (French, German or		
Russian)	3	3
Electives (Mathematics course above		
Mathematics 507)*	3	6
Electives	7	4
	16	16
	10	10

Senior Year

1	-
3	-
3	3
9	10
16	13
	,

^{*}Must include 508 or 512

THE MATHEMATICS EDUCATION PROGRAM

Suggested Schedule of Courses

Freshman Year

	Sem	ester
Course and Number	Fall Credit	Spring Credit
Mathematics 111, 113	4	4
*Science	4	4
English 100, 101	3	3
Physical Education	1	1
Education 100	1	-
Social Science 100, 101	_3	3
	16	15

Sophomore Year

Mathematics 221, 222	4	4
Physics 225, 226	3	3
Physics 235, 236	1	1
Education 300, 301	2	2
Psychology 320	-	3
Humanities 200, 201	3	3
Health Education 200	2	-
Mathematics 350	_3	
	18	16

^{*}The Science requirement may be any one of the following sequences:

^{1.} Chemistry 101, 111 and 102, 112

^{2.} Botany 140, Zoology 160; or, Zoology 160, Botany 140

^{3.} Biology Science 100, Physical Science 100

Junior Year

Course and Number	Credit Hours	Credit Hours
Mathematics 242, 224	3	3
Foreign Language (French, German		
*or Russian)	3	3
Education 400	3	-
Psychology 436	-	3
English 250	2	-
Mathematics 507, 240	3	3
Mathematics 511, 508 or 512	3	3 3
Electives	-	3
	17	18
Senior Year		
Education 637	3	
Electives (Mathematics)	6	-
Mathematics 505	1	-
Electives	2	-
Education 500, 429, 560	-	12
	12	12

DEPARTMENT OF MUSIC

Jimmie J. Williams, Acting Chairperson

OBJECTIVES

The goal of the Department of Music at A&T State University is to give its students the best possible music education while continuing a program of musical service to the University community, the City of Greensboro, and to the State of North Carolina. The Department recognizes the interdependence of education and performance, where their coming together forms a milieu that is conducive to the development of a genuine musical culture. The Department strives to maintain an intellectual climate of learning in which students may develop respect for, and excitement in, the discovery of truth and knowledge.

The objectives and goal of the Department are consistent with the mission of A&T State University as defined by the Board of Governors, the North Carolina Department of Public Instruction, and the National Association of Schools of Music (the accrediting agency). The primary objective of the Department is to prepare the student to enter one or more of the several career areas of music. These may be either music education, performance, conducting, theory, composition, or musicology. The specific objectives are: (1) to enhance the cultural and aesthetic life of the university student through personal experiences in a well-directed program of education in music (2) to provide the student with

basic skills, techniques, pedagogical concepts, insight and perspective for a career as a performing artist and as a teacher of music on the elementary and secondary school levels; (3) to interpret, create, and maintain the highest level in individual and group performance in music; (4) to prepare majors for graduate study in music.

DEGREES OFFERED

B.S.—Music Education (Instrumental Concentration)

B.S.—Music Education (Choral Concentration)

B.A.—Music (Applied Music Concentration)

B.A.—Music (Music History and Literature Concentration)

The Department of Music offers two degree programs. One of these is a liberal arts curriculum leading to the Bachelor of Arts in Music degree with concentrations in Applied Music and Music History and Literature. This degree program is designed to accommodate students who wish to enter some area of music other than teaching. The other degree program is a teacher-education curriculum leading to the Bachelor of Science in Music Education degree with either a choral or instrumental concentration. Students intending to teach in the public schools are strongly urged to follow this curriculum in order that they may meet certification requirements.

Upon entrance into the music education program, each student must choose either an instrumental or a choral concentration. Those whose principal applied music subject is either voice or piano should select the choral concentration; and those whose principal applied subject is an orchestral instrument should select the instrumental concentration. However, a student is not fully admitted to the teacher-education program until the end of the sophomore year. At this time his academic work and general prospects as a teacher are examined by his department and the Teacher-Education Council. This is accomplished in part through special inventories and tests of achievement. Upon acceptance, the student is permitted to enroll in upper level professional education courses.

At the end of the four years, the student is again evaluated by his department and the Teacher Education Council to determine whether he has developed the competencies required of a teacher in his discipline. If the student is able to satisfy all exit criteria, he is then recommended for a teaching certificate. More detailed information concerning entrance and exit requirements and procedures for the teacher-education program is available from the academic advisor.

ADMISSION:

The admission of students to the undergraduate degree programs in the Department of Music is based upon the general admission requirements of the University.

ACCREDITATION:

All Teacher Education Programs are accredited by the National Council for Accreditation of Teacher Education and approved by the North Carolina State Department of Public Instruction.

CAREER OPPORTUNITIES:

Successful completion of the requirements of the B.A. degree in Music or the B.S. degree in Music Education provides the students with career opportunities for public school music teaching, as well as for a career in the performing arena.

ACADEMIC COUNSELING

Each student is assigned to a faculty member for counseling in matters of curriculum and related or personal problems as are appropriate. Students should consult regularly with the advisors to gain the benefits from their experience and expertise.

ADMISSION-RETENTION-EVALUATION

For certified admission to the study of music as a major, the prospective music student must stand in a satisfactory manner.

- 1. Auditions set by the faculty panel in his principal applied music area.
- 2. Standardized tests consisting of the Watkins-Farnum Performance Scale, the Seashore Tests of Musicality, and the entrance level Aliferis Test of Musical Achievement.

To continue in the department of music, students must maintain a "C" average in all music courses. At the end of the sophomore year, the mid-point level Aliferis Test of Musical Achievement is administered and must be stood satisfactorily.

Seniors are encouraged to take the *Undergraduate Record*, the *Graduate Record*, and the *National Teacher Examinations* to build a data base for evaluation of the music program.

PERFORMANCE ENSEMBLES

Each student with a major in music is required to maintain continuous membership in an ensemble related to his principal performing medium. Participation in more than a single ensemble is possible and encouraged as long as there are no schedule conflicts or violations of University policy concerning student course load.

INSTRUMENTS AND PRACTICE FACILITIES

Several small practice rooms are provided as practice facilities for students. Each room contains a piano which is tuned regularly and kept in good repair.

With the exception of piano students, each music major minor is required to furnish an instrument for his personal use. University-owned instruments are primarily for the use of non-major students who serve in the instrumental ensembles to complete the necessary instrumentation as need dictates. In as great a quantity as is possible. University-owned instruments will be provided for the instruction of music majors and minors in music education classes.

DEPARTMENTAL REQUIREMENTS FOR THE MAJOR

BACHELOR OF SCIENCE IN MUSIC EDUCATION

Instrumental Concentration

- I. Applied Music 19 Semester Hours 113, 213, 413, 114, 214, 503, 550
- II. Music Theory 21 Semester Hours 101, 102, 200, 201, 400, 401, 501
- III. Music History and Literature 6 Semester Hours 403, 404
- IV. Music Education 7 Semester Hours 424, 425, 427
 - V. Music Performance 8 to 16 Semester Hours
 One ensemble required each semester, elect from 300 to 309, and add
 307 each semester.
- VI. Professional Education 27 Semester Hours Education 300, 301, 400, 436, 500, 532, 560, 637

TOTAL HOURS REQUIRED: 88 to 96 Semester Hours

Choral Concentration

- I. Applied Music 20-21 Semester Hours 100 or 560, 113, 213, 413, 503, 550, 114, 214
- II. Music Theory 21 Semester Hours 101, 102, 200, 201, 400, 402, 501
- III. Music History and Literature 6 Semester Hours 403, 404
- IV. Music Education 6 Semester Hours 424, 425, 426
 - V. Music Performance 8 to 16 Semester Hours
 One ensemble required each semester, elect from 300 to 309, and add
 307 each semester.
- VI. Professional Education 27 Semester Hours Education 300, 301, 400, 436, 500, 530, 531, 560, 637

TOTAL HOURS REQUIRED: 88 to 97 Semester Hours

BACHELOR OF ARTS IN MUSIC

Applied Music Concentration

- Applied Music 21 to 23 Semester Hours
 113, 213, 413, 513, 114, 214, 503, 550. Voice students add 100.

 Piano students add 560.
- II. Music Theory 22 Semester Hours 101, 102, 119, 200, 201, 400, 402, 501
- III. Music History and Literature 10 Semester Hours 403, 404, Wind and Percussion students add 408 and 412. Piano students add 409 and 412. Voice students add 410 and 411.
- IV. Music Performance 18 Semester Hours 307 and either 300 or 301 or 309 (eight semesters); and either 302, 303, 304, 305, 306, or 308 (two semesters) in senior year.
- V. Other Music Courses 3 Semester Hours
- VI. Related Courses 3 Semester Hours Philosophy 260

TOTAL HOURS REQUIRED: 77-79

HISTORY AND LITERATURE CONCENTRATION

- Applied Music 21 to 23 Semester Hours
 113, 213, 413, 513, 114, 214, 503, 550. Voice students add 100.
- II. Music Theory 22 Semester Hours 101, 102, 119, 200, 201, 400, 402, 501
- III. Music History and Literature 18 Semester Hours 403, 404, 405, 406, 407, 408, 410, and either 409, 411, or 412
- IV. Music Performance 8 to 16 Semester Hours One ensemble required each semester, elect from 300 to 309 and add 307 each semester.
- V. Other Music Courses 3 Semester Hours 618
- VI. Related Courses 6 Semester Hours English 210, 500

TOTAL HOURS REQUIRED: 78 to 88 Semester Hours

GENERAL EDUCATION REQUIREMENTS FOR B.S. IN MUSIC EDUCATION

English Composition (2 courses required)
Eng 100
Natural and Physical Science (4 courses required)
Biol 100 4(3-2 Phys 200 2(2-0 Math 101 3(3-0 Math 102 3(3-0
Foreign Language (2 courses required)
French, German, or Spanish I
Social and Behavioral Sciences (3 courses required)
Hist 100
Humanities (4 courses required*)
Eng 200
Health or Physical Education
Phy Ed 200

GENERAL EDUCATION REQUIREMENTS FOR B.A. IN MUSIC

Applied Music Concentration

NOTE: The general education requirements are the same as for the B.S. in Music Education requirements with the following exceptions:

1)	Add: I	Phil 260		 					3(3-0)
2)	Delete:	Phy Ed	101	 					1(0-2)
		Phy Ed							
		Speech							

MUSIC HISTORY AND LITERATURE CONCENTRATE

NOTE The general education requirements are the same as for the B.S. in Music Education requirements with the following exceptions:

1)	Add: P	hil 260		 					3(3-0)
	E	ing 210		 					3(3-0)
	E	ing 500		 				٠.	3(3-0)
2)	Delete:	Phy Ed	101	 					1(0-2)
		Phy Ed							
		Speech	250						2(2-0)

BACHELOR OF SCIENCE DEGREE IN MUSIC EDUCATION

Instrumental Concentration

Freshman Year

1st Semester	Cr. Hrs.	2nd Semester	Cr. Hrs.
Mus 101 Theory I		Mus 102 Theory II	
Mus 113 App. Principal		Mus 113 App. Princip	
Mus 114 App. Sec	1	Mus 114 App. Sec	1
Mus 300-309 Ensemble	1 or 2	Mus 300-309 Ensemb	le 1 or 2
Mus 307 RecSem	0	Mus 307 RecSem	0
Eng 100 Fr. Comp. I	3	Eng 101 Fr. Comp. II	3
His 100 Hist of W.C. I	3	Hist 101 Hist of W.C	. II 3
Phy 200 Intro to Phys	<u> 2</u>	Bio 100 Biol. Sci	4
	15 or 16		17 or 18

Sophomore Year

1st Semester	Cr. Hrs.	2nd Semester	Cr. Hrs.
Mus 200 Theory III . Mus 213 App. Principe Mus 214 App. Sec Mus 300-309 Ensembl Mus 307 RecSem For. Lang. I Fr., Ger., Math 101 Fr. Math I Psy 320 Gen. Psy Phy. Ed 101 Fundame		Mus 201 Theory IV Mus 213 App. Princ Mus 214 App. Sec. of Mus 300-309 Ensem Mus 307 RecSem. For. Lang. II Fr., Ge Math 102 Fr. Math I Ed. 300 Intro to Ed. Phy. Ed 102 Fundan	
Thy. 24 for Fundamen	17 or 18	Speech 250 Speech F	

18 or 19

BACHELOR OF SCIENCE DEGREE IN MUSIC EDUCATION (CONT'D)

Instrumental Concentration Junior Year

1st Semester Cr. H	Irs.	2nd Semester	Cr. Hrs.
Mus 400 Counterpoint	. 3	Mus 402 Form & Analysis	3
Mus 403 Hist & Lit I		Mus 404 Hist & Lit II	
Mus 413 App. Principal	. 2	Mus 413 App. Principal .	
Mus 300-309 Ensemble 1 o		Mus 300-309 Ensemble	1 or 2
Mus 307 RecSem	. 0	Mus 426 Brass Instr	
Mus 424 Perc. Instr		Mus 427 Voice Class	
Mus 425 WW Instr.	. 2	Mus 307 RecSem	
Eng 200 Humanities I		Eng 201 Humanities II	
Ed 301 Phil & Soc. Found		Phy Ed 200 Pers. Hygiene	
18 or	19		17 or 18

Senior Year

1st Semester	Cr. Hrs.	2nd Semester	Cr. Hrs.
Mus 300-309 Ensemble Mus 307 Rec-Sem Mus 501 Arranging Mus 503 Score Read & O Mus 550 Senior Recital Ed 436 Tests & Meas . Ed 530 Publ. Sch Mus M Ed 400 Psy. Found	03 Cond213 Meth2	Mus 300-309 Ensem Ed 500 Prin. & Curr. Ed 532 Band Method Ed 560 Obser. & Pr. Ed 637 Tchng Read i	of Sec Sch 3 ls 3 Tchng 6

15 or 16

Total Hours: 133-141 hrs. Gen Educ: 45 hrs. Music Hours: 61-69 hrs.

Prof. Educ: 27 hrs.

NOTE: The particular requirements for the B.S. degree in Music Education with a Choral Concentration are the same as the instrumental concentration with the following exceptions:

Fesh. Year; 1st Sem: Add Mus 100 Diction for Singers (1 Hr.); Piano students take Mus 560 Accompanying (2 Hr.) instead of Mus 100.

Junior Year, 2nd Sem: Delete Mus 427 Voice Class (1 Hr.)

Senior Year, 2nd Sem: Substitute Ed 531 Vocal Methods and Materials (3 Hrs)

instead of Ed 532

Total Hrs: 133-142 hrs. Gen. Educ: 45 hrs. Music Hrs: 61-70 hrs. Prof. Educ: 27 hrs.

BACHELOR OF ARTS DEGREE IN MUSIC

Applied Music Concentration

Freshman Year

1st Semester	Cr. Hrs.	2nd Semester	Cr. Hrs.
Mus 101 Theory I Mus 113 App. Principal Mus 114 App. Sec *Mus 300-309 Ensemble Mus 307 RecSem Eng 100 Fr. Comp. I His 100 Hist. of W.C. I *Mus 100 Dict for Singers Mus 119 Sightsinging .	22033	Mus 102 Theory II Mus 113 App. Princ Mus 114 App. Sec. *Mus 300-309 Ensem Mus 307 RecSem. Eng 101 Fr. Comp. Hist 101 Hist of W.	dipal 2 1 able 2 0 I 3
	16		

Sophomore Year

1st Semester	Cr. Hrs.	2nd Semester	Cr. Hrs.
Mus 200 Theory II		Mus 201 Theory IV	3
Mus 213 App. Princip	oal2	Mus 213 App. Princ	cipal2
Mus 214 App. Sec	1	Mus 214 App. Sec.	1
*Mus 300-309 Ensemb		*Mus 300-309 Ensen	
Mus 307 RecSem	0	Mus 307 RecSem.	0
For. Lang I Fr., Ger.,	or Span 3	For. Lang. II Fr., Ge	er., or Span 3
Math 101 Fr. Math I.	3	Math 102 Fr. Math l	II3
Phy. Ed 200 Personal	Hygiene 2	Phy 200 Intro to Phy	/sic2
	16		16

Junior Year

1st Semester	Cr. Hrs.	2nd Semester	Cr. Hrs.
Mus 400 Counterpoint Mus 413 App. Princips *Mus 300-309 Ensembl Mus 307 RecSem Mus 403 Hist & Lit I Eng 200 Humanities I Phil 260 Intro to Phil.	al 2 e 2 0 3	Mus 402 Form & Analysis Mus 413 App. Principal *Mus 300-309 Ensemble . Mus 404 Hist & Lit II . Mus 307 Rec-Sem Eng 201 Humanities II . Bio 100 Biol. Science	2
Tim 200 meto to Tim.	16	Dio 100 Dioi. Science	17

Senior Year

1st Semester	Cr. Hrs.	2nd Semester	Cr. Hrs.
*Mus 300-309 Ensemble		*Mus 300-309 Enser	
Mus 300-309 Ensemble		Mus 300-309 Enser	nble 1
Mus 307 Rec-Sem	0	Mus 307 Rec-Sem.	0
Mus 408 Symphony or		Mus 411 Art Song	or
410 Opera	2	412 Chamber 1	Music or
Mus 501 Arranging	3	409 Keyboard	Music 2
Mus 513 App. Principal	2	Mus 503 Score Read	d & Cond2
Psy 320 Gen. Psy	3	Mus 550 Senior Rec	ital 1
Mus 560 Accompanying	<u>2</u>	Mus 618 Psy of Mu	sic3
	15		11

*NOTE: Only Voice Majors take Mus 100 Diction for Singers.

The B.A. Applied Musice Curriculum requires 8 semesters of a 2-hour ensemble, either Music 300, 301, or 309; in addition, the Applied Concentration requires two 1-hr ensembles.

Total hours: 118-120 hrs. Gen. Educ: 44 hrs. Music Hours: 74-76 hrs.

BACHELOR OF ARTS DEGREE IN MUSIC

Music History and Literature Concentration

Freshman Year

1st Semester	Cr. Hrs.	2nd Semester	Cr. Hrs.
Mus 101 Theory I Mus 113 App. Principa Mus 114 App. Sec. Mus 119 Sightsinging Mus 307 RecSem. Mus 300-309 Ensemble Mus 100 Diction for Si Eng 100 Fr. Comp. I His 100 His of W.C. I	al 2	Mus 102 Theory II Mus 113 App. Princip Mus 114 App. Sec Mus 307 Rec-Sem Mus 300-309 Ensembl Eng 101 Fr. Comp. II His 101 His of W.C. I Bio 100 Biol. Sci	al20 le1 or 23 I3
	Sophomo	ore Year	
1st Semester	Cr. Hrs.	2nd Semester	Cr. Hrs.
Mus 200 Theory III . Mus 213 App. Principa Mus 214 App. Sec Mus 300-309 Ensembl Mus 307 RecSem Mus 403 His & Lit I . Math 101 Fr. Math I Mus 560 Accompanyin	al 2	Mus 201 Theory IV . Mus 213 App. Princip Mus 214 App. Sec Mus 300-309 Ensemb. Mus 307 RecSem Mus 404 His & Lit II Math 102 Fr. Math II Phy Ed 200 Pers. Hyg	al21 le1 or 2033
	Junior	Year	
1st Semester	Cr. Hrs.	2nd Semester	Cr. Hrs.
Mus 400 Counterpoint Mus 405 Baroque Mus Mus 413 App. Princip Mus 300-309 Ensembl Mus 307 RecSem. For. Lang I Fr., Ger., o Eng 200 Humanities I Psy 320 Gen Psy	ic 2 al 2 e 1 or 2 0 or Span 3 3	Mus 402 Form & Anal Mus 406 Romantic Mu Mus 413 App. Princip Mus 300-309 Ensemb Mus 307 Rec-Sem For Lang II Fr., Ger., of Eng 201 Humanities II Phil 260 Intro to Phil.	asic 2 al 2 le 1 or 2 0 or Span 3 [3

Senior Year

1st Semester	Cr. Hrs.	2nd Semester	Cr. Hrs.
Mus 300-309 Ensemble Mus 407 Modern Music Mus 408 Symphony Mus 501 Arranging Mus 513 App. Principal Mus 618 Psy of Music . Eng 210 Intro to Lit Studies	2 3 2 3 3	Mus 300-309 Ensemble Mus 410 Opera Mus 409 Keyboard Mus 411 Art Song or 412 Chamber Musi Mus 503 Score Read & C Mus 550 Senior Recital Eng 500 Lit Research	
	16 or 17		11 or 12

Total Hours: 122-132 hrs. Music Hours: 72-82 hrs. Gen. Educ: 50 hrs.

DEPARTMENT OF PHYSICS

Jason Gilchrist, Chairperson

OBJECTIVES

The specific objectives of the Department are:

- To prepare majors for graduate study and careers in physics, medicine and other professional fields.
- 2. To prepare majors for work in research and development laboratories.
- 3. To prepare majors to teach physics and mathematics in high school.
- 4. To provide majors in other departments with a clear understanding of the laws of physics and their applications.
- To provide all students with the ability to make meaningful observations, to convert these observations into mathematical language, and to reach logical conclusions.

DEGREES OFFERED

Physics, Professional—B.S. Physics, Secondary Education—B.S. Engineering Physics—B.S.

GENERAL PROGRAM REQUIREMENTS

In addition to the general admission requirements of the University, a student must have one and one-half units of algebra, one unit of plane geometry, and one-half unit of solid geometry.

DEPARTMENTAL REQUIREMENTS

Professional Physics Major—The major in professional physics must complete 124 semester hours of University courses. Included in the 124 semester hours are 47 semester hours of physics courses at the 200 level or above.

The major in physics can complete requirements for a professional physics degree and also fulfill requirements for admission to medical school by taking the following courses as electives: Biology 160, 140, 260 and Chemistry 221, 222. Many medical schools will also accept students after the completion of the third year of study.

Teaching Major in Physics—The teaching major must complete 125 semester hours of University courses. Included in these 125 hours are 24 semester hours of physics courses at the 200 level or above.

Engineering Physics Major—The major in engineering physics must complete 127 semester hours of University courses. Included in the 127 semester hours are 37 semester hours of physics and 28 semester hours in engineering.

ACCREDITATION:

All Teacher Education Programs are accredited by the National Council for Accreditation of Teacher Education and approved by the North Carolina State Department of Public Instruction.

CAREER OPPORTUNITIES:

A degree in physics will allow the student to go directly into research activity, study for an advanced degree, or teach in junior or senior high school. A study of physics may give the technical background useful in such fields as: Medicine, Law, Computer Science, Astronomy, or Business.

SUGGESTED CURRICULUM GUIDE FOR A PROFESSIONAL PHYSICS MAJOR IN PHYSICS

Bachelor of Science

Freshman Year

1st Semester	Cr. Hrs.	2nd Semester	Cr. Hrs.
Course and Number		Course and Number	
Physics 102	1	History 100	3
English 100	3	English 101	3
Physics 221	3	Physics 222	3
Physics 231	2	Physics 232	2
Mathematics 116	5	Mathematics 117	5
English 102	1		
			16
	15		

Sophomore Year

	•		
1st Semester	Cr. Hrs.	2nd Semester	Cr. Hrs.
Course and Number		Course and Number	
History 101	3	Humanities 200	3
Mathematics 300	4	Mathematics 500	4
Mathematics 240	3	Physics 406	3
Chemistry 101	3	Chemistry 102	3
Chemistry 111	1	Chemistry 112	1
Physics 400	3	Physics 600	3
	17		17

Junior Year

1st Semester	Cr. Hrs.	2nd Semester	Cr. Hrs.
Course and Number		Course and Number	
Humanities 201	3	Physics 601	5
Physics 555	3	Physics 556	3
Physics 420	1	Physics 421	1
Physics 401	3	Electives	6
Physics 403	3		15
Elective	3		15
	16		

	001110	· · · · · ·	
1st Semester	Cr. Hrs.	2nd Semester	Cr. Hrs.
Course and Number		Course and Number	
Physics 605	3	Physics 606	3
French German or Russian	3	French German or Russian	3
Physics 402	3	Electives	. 7
Electives	6		12
			13
	15		

SUGGESTED CURRICULUM FOR A TEACHING MAJOR IN PHYSICS

Bachelor of Science

Freshman Year

1st Semester Course and Number	Cr. Hrs.	2nd Semester Course and Number	Cr. Hrs.
English 100	3	English 101	3
History 100	3	History 101	3
Chemistry 101	3	Chemistry 102	3
Chemistry 111	1	Chemistry 112	1
Mathematics 111	4	Mathematics 113	4
Physical Education	1	Physical Education	1
Physics 102	1	•	
*			15
	16		

Sophomore Year

1st Semester	Cr. Hrs.	2nd Semester	Cr. Hrs.
Course and Number		Course and Number	
Psychology 320	3	Education 300	2
Humanities 200	3	Humanities 201	3
Mathematics 221	4	Mathematics 222	4
Physics 221	3	Physics 222	3
Physics 231	2	Physics 232	2
English 250	2	Health Education 200	2
	17		16

Junior Year

1st Semester	Cr. Hrs.	2nd Semester	Cr. Hrs.
Course and Number		Course and Number	
Mathematics 300	4	Education 400	3
Physics 400	3	Physics 403	3
Physics 406	3	Physics 421	1
Physics 420	1	Biology 140	4
Education 301	2	Electives	6
Biology 160	4		
0,			17
	17		

1st Semester	Cr. Hrs.	2nd Semester	Cr. Hrs.
Course and Number		Course and Number	
Physics 557	3	Education 500	6
Education 436	3	Education 500	3
Mathematics 240	3	Education 535	3
Physics Electives	6		12
	15		

SUGGESTED CURRICULUM GUIDE FOR A MAJOR IN ENGINEERING PHYSICS (ENGINEERING PHYSICS OPTION)

Bachelor of Science

Freshman Year

1st Semester Course and Number	Cr. Hrs.	2nd Semester Course and Number	Cr. Hrs.
Physics 102	1	Physics 221	3
English 100	3	Physics 231	2
Mathematics 116	5	English 101	3
History 100	3	Mathematics 117	5
Engineering Graphics I 101	2	History 101	3
•	$\overline{14}$		16

Sophomore Year

1st Semester	Cr. Hrs.	2nd Semester	Cr. Hrs.
Course and Number		Course and Number	
Mathematics 300	4	Mathematics 500	4
Physics 222	3	Mathematics 240	3
Physics 232	2	Chemistry 102	3
Chemistry 101	3	Chemistry 112	1
Chemistry 111	1	Humanities 201	3
Humanities 200	3	M.E. 200	3
	16		17

Junior Year

Cr. Hrs.	2nd Semester Course and Number	Cr. Hrs.
3 3 3 3	Physics 402 Physics 403 M.E. 337 Electives in physics E.E. 320	3 3 3 4 16
	3 3 3 3	Course and Number 3 Physics 402 3 Physics 403 3 M.E. 337 5 Electives in physics 5 E.E. 320

1st Semester	Cr. Hrs.	2nd Semester	Cr. Hrs.
Course and Number		Course and Number	
Electives	3	Electives	6
Physics 555	3	Physics 556	3
Physics 420	1	Physics 421	1
Electives in physics	3	M.E. 416	3
Electives in engineering	4	Electives in engineering	3
Humanities - social studies	3		
			16
	17		

DEPARTMENT OF POLITICAL SCIENCE

Amarjit Singh, Acting Chairperson

OBJECTIVES

The Department of Political Science offers courses in four principal fields: Public Policy Formation, Public Administration, Political Theory and Methodology, and International Affairs.

The purpose of the department is to provide the student with a basic education in the ideas, institutions and processes of politics and government which he will find helpful in preparing for careers in government service, public affairs, law, and urban affairs. In fulfilling its primary aim the department has the following objectives.

- To develop a basic understanding of the operation of government at various levels.
- 2. To encourage students to engage in constructive criticism of the political and social problems.
- 3. To develop competence in the language and skills of the discipline.
- 4. To prepare students for advanced study.

DEGREES OFFERED

Political Science—B.A.

GENERAL PROGRAM REQUIREMENTS

The admission of students to the undergraduate degree program in the Department of Political Science is based upon the general admission requirements of the University.

DEPARTMENTAL REQUIREMENTS

The major in Political Science must complete 124 semester hours of University courses. Included in the 124 semester hours are 30 hours of political science courses. A minimum of 18 hours may be selected from political science above the 200 level. 12 major hours are required in the following courses:

REQUIRED COURSES FOR POLITICAL SCIENCE MAJORS

	Course No.	Credit Hours	Course Title
Pol	. Sc. 200	3	American Government and Politics
Pol	. Sc. 210	3	State and Local Government
Pol	. Sc. 440	3	Political Theory
Pol	. Sc. 443	3	Public Administration

CAREER OPPORTUNITIES

Careers are in public service, public administration, law (for those continuing to law school), business, industry, foreign service or leadership in civic and political activities. A student may major in the general subject of political science or pursue a more concentrated program appropriate to his personal interests, career objective and plans for graduate study. Fields of concentration are listed below with the careers for which they provide necessary preparation.

SUGGESTED CURRICULUM GUIDE FOR MAJORS IN POLITICAL SCIENCE Freshman Year

	Fall Semester	Spring Semester
Course and Number	Credit	Credit
English 100, 101	3	3
*Mathematics 101, 102	3	3
History (See Below)	3	3
Physical Science 100	-	4
Biological Science 100	4	-
Education 100	1	-
Physical Education 101, 102	1	1
*Health Education 200	2	
Political Science 200	-	. 3
	17	17

The following History courses may be elected by Freshmen students to satisfy the core requirements: 100, 101, 107.

Sophomore Year

	Fall Semester	Spring Semester
Course and Number	Credit	Credit
French 100, 101 or		
German 102, 103 or		
Spanish 104, 105	3	3
*Speech 250	2	-
Political Science 210	3	-
History 204, 205	3	3
Humanities 200, 201	3	3
Political Science 220	-	3
Psychology 320	-	3
*Electives	3	3
	17	18

Junior Year

	Fall Semester	Spring Semester
Course and Number	Credit	Credit
Pol. Sc. 440, Sociology 302	3	3
Pol. Sc. 443, *Elective	3	3
Elective Political Science	3	3
Economics 300, 301	3	3
Philosophy 260 or 261 or 262	-	3
*Electives	3	3
	15	18

Senior Year

	Fall Semester	Spring Semester
Course and Number	Credit	Credit
Elective Political Science	3	3
Elective Political Science	3	3
*Electives	3	3
*Electives	2	2
	11	11

PRE-LAW STUDENTS

Students often ask, what course of study is best if one desires to enter law school upon graduation. The University of Denver Bulletin, College of Law, makes the following comment:

In the College of Law, as in most law schools, there is no course of study prescribed to precede admission to the study of law. A desirable prelegal course is one which prepares the student to think analytically, to reason logically, to concentrate effectively, to study purposefully and to express himself clearly in writing and speaking. In general, the prelaw student should acquire a broad liberal education. So far as possible, choice of courses should be made in accordance with the individual student's interest and needs. However, the student is strongly urged to obtain a broad background in the English language, including reading, writing and speaking.

^{*}Electives should be chosen from the following areas: English, History, Economics, Transportation, Business Administration and Sociology. For suggested courses, see your advisor.

DEPARTMENT OF PSYCHOLOGY

Emory Sadler, Chairperson

OBJECTIVES:

The Department of Psychology serves the University by offering the undergraduate major in psychology and by providing service courses for other departments. The psychology program prepares students for graduate study in psychology and associated fields, as well as providing them with skills related to employment at the baccalaureate level.

DEGREES OFFERED:

B.A. degree in Psychology

B.A. degree in Psychology with a Concentration in Manpower

GENERAL PROGRAM REQUIREMENTS:

The admission of students to the undergraduate programs in the Department of Psychology is based upon the general admission requirements of the University.

DEPARTMENTAL REQUIREMENTS:

Psychology majors must complete the following to satisfy requirements for graduation:

- Complete a minimum of 124 semester hours excluding deficiency and remedial work.
- Complete 54 hours of general education requirements and 46 hours in psychology. An additional 12 hours are required of majors seeking the manpower concentration.
- 3. Earn an average of two grade points for every semester hour undertaken including hours passed or failed. Students must also earn an average of 2.00 or more in psychology courses.
- 4. If the student has transferred or been readmitted, he or she must complete a minimum of three semesters as a full-time student in residence at the University. This includes two semesters prior to the period when the student completes his or her requirements for graduation. At least one-half of the credits in psychology must be earned at the University.

Students desiring to minor in psychology must complete Psy. 320, Psy. 322, and an additional 18 semester hours in psychology.

CAREER OPPORTUNITIES:

To function as a professional psychologist, it is necessary to complete graduate training in the discipline. Career opportunities in psychology at the baccalau-

reate level are limited. Students who elect the concentration in Manpower, gain expertise in coping with problems of employment and additional skills for careers at the B.A. level in state, city, and county government; federal agencies; private industry; and community employment and training agencies.

Suggested Curriculum Guide for a Major in Psychology

Freshman

Fall Semester	Cr. Hrs.	Spring Semester	Cr. Hrs.
Biology 100	4	Physical Science 100	3
English 100	3	Physical Science 110	1
History 100	3	English 101	3
Psychology 100	1	History 101	3
Mathematics 101	3	Mathematics 102	3
Physical Education 101	1	Physical Education 102	1
·		Psychology 321	3
	15		
			17

Sophomore

Cr. Hrs.	Spring Semester	Cr. Hrs.
3	Foreign Language	3
3	Humanities 201	3
2	Sociology 100	3
2	Psychology 440	3
3	Psychology 325	3
3	, ,,	
16		15
	3 3 2 2 3	Foreign Language Humanities 201 Sociology 100 Psychology 440 Psychology 325

Junior

Fall Semester	Cr. Hrs.	Spring Semester	Cr. Hrs.
Psychology 420	3	Zoology 461	4
Psychology 441	3	Psychology 439*	3
Humanities Elective	3	Psychology 434*	3
Free elective*	3	Free electives*	6
Psychology elective	3		
	_		16
	15		

Senior

Psychology 542*	3	Psychology 540 or 541	3
Free elective*	9	Free electives*	6
Psychology elective	3	Psychology 544	3
,		Psychology eletive	3
	15		
			15

*Psychology majors with a concentration in Manpower should substitute Psy. 444, 445, and 610 for Psy. 434, 439, and 542 which may be taken as psychology electives. They should also take Sociology 501 or 601, Business Administration 522, Economics 602 and 603 with 12 hours remaining as free electives.

DEPARTMENT OF SOCIOLOGY AND SOCIAL SERVICE

Frances Logan, Chairperson

OBJECTIVES

- A. Preparation of students for careers at the baccalaureate level in Social Work and Manpower agencies.
- B. Preparation of students for graduate study in Sociology, Social Work and related areas of Anthropology, Criminal Justice, Law, Social Planning and Urban Studies.
- C. Upgrading of Social Work competencies of employed social work personnel at the baccalaureate level.
- D. Provision of service courses in Sociology and Social Work for students in other areas of study in the University.
- E. Preparation of graduates committed to participation in scholarly and professional activities.
- F. Preparation of graduates motivated to participate in activities related to alleviation of human suffering and promotion of positive social conditions for all members of society.

DEGREES OFFERED

Sociology—B.A. Social Service—B.S.

GENERAL PROGRAM REQUIREMENTS

- A. Completion of 124 credit hours with a minimum grade point average of 2.0 on a 4 point scale for earning the degree.
- B. Maintenance of the University specified grade point average for continued study in the Department.

DEPARTMENTAL REQUIREMENTS

- A. Completion of the designated educational program for the degree program in the major.
- B. Completion of all required courses in the major area of study with a grade of "C" or better.
- C. Social Work majors must achieve Junior status with an overall grade point average of 2.0 prior to registering for field instruction.
- D. Students who wish to qualify for positions in Manpower agencies, immediately upon earning the baccalaureate degree, may complete their major requirements and concentrate in the Manpower program simultaneously.

ACCREDITATION

The Social Work Program is nationally accredited by the Council on Social Work Education.

CAREER OPPORTUNITIES

Graduates earning the Bacher of Science Degree in Social Work are prepared for careers in social work immediately upon graduation.

Graduates completing the Manpower Concentration are prepared for career employment in Manpower agencies in areas of Manpower Planning, Manpower Personnel and/or Manpower Evaluation.

CURRICULUM GUIDE(S)

A. Bachelor of Arts Degree in Sociology

This program prepares students for graduate study, primarily in Sociology. To qualify for admission to graduate programs Sociology majors should maintain a minimum cumulative grade point average of 3.00 especially in the junior and senior years. The major in Sociology must complete a minimum of 36 semester hours in Sociology. Students desiring to minor in Sociology must complete 21 semester hours in Sociology.

During the Freshman and Sophomore years the following courses should be completed:

Biology 100 and Earth Science 201	7
English 100, 101	6
Speech 250	2
Foreign Language	12
Health Education 200	2
Mathematics 111, 112, 240	11
Philosophy 262 and Philosophy Elective	6
*Sociology 100, 101, 204, 303, and 303	13
*Sociology Elective	3
	62 credits

During the Junior and Senior years the following courses should be completed:

**Political Science, Economics, Psychology,	
Anthropology, History, Manpower, Transportation	n
or Mass Communications	18
English 300 and English Elective	6
*Sociology 301, 308 or 501, 402, 403, 671, 673	18
*Suggested Sociology Electives: 406, 670, 669	9
*Sociology/Social Service 570	1
Free Electives	10
	62 credits

^{*}Must be completed with a grade of "C" or better.

B. Bachelor of Science Degree in Social Service

The major in Social Service must complete 124 semester hours credit. The program is accredited by the Council on Social Work Education and is designed to prepare undergraduate students for professional careers in social work.

During the Freshman and Sophomore years the following courses should be completed:

Political Science 200, 210, 443 or	
Economics 300, 301 and BA 442	9
Psychology or Anthropology	6
Biology 100 and Earth Science 201	7
Mathematics 111, 240	4

^{**}Sociology students are encouraged to select one of the following concentrations in fulfilling his/her 18 credit hours in a cognate area. Those interested in completing courses for certification in Social Work should work out an appropriate course of study with their advisors.

Manpower Problems

Mannower Planning

6
6
2
2
3
10
3
2
63 credits

During the Junior and Senior years the following courses should be completed:

English 300 and English Elective	6
*Sociology 301, 402, 403	9
*Social Service 306, 307, 333, 334, 520, 571	21
*Social Service Electives	6
Philosophy 262 and Elective from	
Philosophy 260, 261, or 608	6
*Sociology/Social Service 570	1
Free Electives	12
	61 credits

^{*}Must be completed with a grade of "C" or better.

C. Concentration in Manpower

Core Requirement Econ. 602

Fcon 603

ECOII. 005	wianpower Flamming
B.A. 522	Personnel Mgt.
Soc. 501	Social Stratification, or
Soc. 600	Seminar in Social Planning
	Statistics in:
Soc. 302	Sociology
Econ. 305	Economics
Psy. 322	Psychology
Psy. 445	Industrial Psychology
·	Manpower Internship
Econ. 599	Independent Study
I.T. 447 or	Coop. Trng. Indus. I
I.T. 478	Coop. Trng. Indus. II
Psy. 610	Manpower Internship
Soc. 318	Practicum in Community

Electives

Econ. 504 Econ. 604	Labor Problems Evaluation Methods
Psy. 444	Applied Psychology
Psy. 544	Psychological Testing
Psy. 600	Introduction to Guidance
Psy. 645	Behavior Modification
Soc. 674 Soc. 601	Evaluation of Social Programs Seminar in Urban Studies
Soc. 309	Disability & Employment

D. Minor in Sociology

Students from other departments who wish to minor in Sociology Should complete with a grade of "C" or better the following courses:

S100	Principles of Sociology	3
S101	Sociology Lab	1
S302	Statistics I	3
S204	Social Problems	3
S301	Origins of Social Thought	3
S303	Social Statistics II	. 3
S403	Social Research	3
		19 credits

E. Minor in Social Service

Students from other departments who wish to minor in Social Service should complete with a grade of "C" or better the following courses:

SS133	Social Professions, Fields & Services	
	(or appropriate SS Elective)	3
SS306	Social Functioning and Human	
	Development	3
SS307	Field Instruction I	5
SS 333	Social Welfare	3
SS520	Field Instruction II	5
SS571	Social Work Methods II	2
Social Se	rvice Electives	9
		22 1:
		33 credits

F. Bachelor of Science Degree in Social Service for Students with a Baccalaureate Degree

If a person already has a baccalaureate degree in another field and wishes to qualify for a B.S. degree in Social Service he/she must complete the following requirements. Prior credit may have been earned for some of these courses in other institutions. Credit is transferable for grades of "C" or better. The University requires a minimum of 32 hours in residence to earn the second baccalaureate degree.

S100	Principles of Sociology	3
S101	Sociology Lab	1
S204	Social Problems	3
S302	Statistics I	3
Math 11	1 College Algebra	4
S301	Origins of Social Thought	3
S402	Social Theories	3
S403	Social Research	3
Math 24	O Computer Programming	3
SS306	Social Functioning and	
	Human Behavior	3
SS333	Social Welfare Policy	3
SS307	Field Instruction I	5
SS334	Social Work Methods	3
SS520	Field Instruction II	5
SS571	Advanced Social Work Methods	2
	*Electives	10
		57 credit hours

^{*}Electives may include intra-departmental courses.

DEPARTMENT OF SPEECH, COMMUNICATION AND THEATRE ARTS

Mary E. Moore, Chairperson

OBJECTIVES:

The objectives of the Department of Speech Communication and Theatre Arts are as follows:

- 1. To develop oral communicators with competence not only in the process of voice and diction, but with competence in the total process of speech communication, traditional and contemporary.
- To develop speech and theatre teachers, speech and hearing therapists, mass communication specialists, and professional actors with personal competence (voice and diction) in speech communication.
- To prepare students for successful study at the graduate level in the area of speech, theatre, speech pathology and audiology, and mass media communications.
- 4. To prepare students for successful study at the graduate level in the area of speech-oriented careers such as law, business, government, public relations and the ministry.

- To teach marketable knowledge, values, and skills essential for use in radio-TV and the print media, effective for providing competent service in mass media.
- To develop in the student the power of independent and creative thinking, critical judgement, self-control, integrity, dignity, moral stability, and individual initiative.
- To provide students with sufficient on-the-job work and study experiences to gain much needed vocational skills as well as an appreciation of the profession of mass media communication.
- 8. To provide a variety of speech courses to meet the University's general education requirements.

DEGREES OFFERED:

Speech Communication and Theatre Arts—B.A.
Speech Communication and Theatre Arts Education—B.S.

GENERAL PROGRAM REQUIREMENTS:

The admission of students to the undergraduate degree program in the Department of Speech Communication and Theatre Arts is based upon the general admission requirements of the University.

All majors in the Department of Speech Communication and Theatre Arts

are expected to maintain a minimum grade point average of 2.0.

DEPARTMENTAL REQUIREMENTS:

SPEECH COMMUNICATION AND THEATRE ARTS TEACHING MAJOR—The teacher education major must complete a minimum of 125 semester hours of University courses. Included in the 125 semester hours are thirty-eight semester hours of speech and theatre courses at the 200 level or above and 25 semester hours of required education courses. A minimum grade of "C" must be achieved in these courses.

SPEECH COMMUNICATION AND THEATRE ARTS NON-TEACH-ING MAJOR—The non-teaching major in Speech Communication and Theatre Arts must complete a minimum of 125 semester hours of University courses. Included in these 125 semester hours are thirty-nine semester hours of speech and theatre courses or allied electives at the 200 level or above. A minimum grade of "C" must be achieved in these courses.

SPEECH PATHOLOGY AND AUDIOLOGY OPTION—Students pursuing this program must complete a minimum of 125 semester hours of University courses. Included in the 125 semester hours are forty-five semester hours of speech communication courses at the 200 level or above. A minimum grade

of "C" must be achieved in the speech communication courses.

MASS COMMUNICATION OPTION—The Mass Communications option is an interdisciplinary sequence (English and Speech) of study. Students pursuing this program must complete a minimum of 127 semester hours of University courses. Included in these 127 semester hours are thirty-nine semester hours in speech and theatre courses and 15 semester hours in English courses at the 200 level or above. These courses must be completed with a grade of "C" or better.

PROFESSIONAL THEATRE—A major in professonal theatre must complete a minimum of 124 semester hours of University courses. Included in the 124 semester hours are fifty-two semester hours of speech and theatre courses at the 200 level or above. A minimum of "C" must be achieved in these courses.

ACCREDITATION:

The Speech Communication Teacher Education Program is accredited by the National Council for Accreditation of Teacher Education and approved by the North Carolina State Department of Public Instruction.

CAREER OPPORTUNITIES:

Prospects of employment with a teaching degree in Speech Communication will vary dependent upon the geographic location and the academic areas one is certified to teach outside of Speech Communication. An advanced degree in teaching will provide more flexibility in the selection of available positions in public, private and parochial junior and senior high schools and in public colleges and universities. Due to the projected decline in student enrollment through 1985, alternatives to secondary teaching should be considered.

A liberal arts degree in Speech Communication and Theatre Arts will prepare students for careers in personnel and public relations. Corporations, consulting firms, manufacturing firms, educational institutions and state and local government agencies will provide many job opportunities in personnel and public

relations through 1985. Competition at the entry level will be keen.

Careers in the areas of speech pathology and audiology are expected to increase through the mid-1980's. With a master's degree, employment in clinics, schools, hospitals, state and federal government agencies, industry and private practice is favorable but competitive, dependent upon the geographic location. Competition for teaching positions in colleges and universities will be

very keen.

With a liberal arts degree and a first class license, entry level jobs in radio and television broadcasting are numerous, specifically in programming, sales and management. New radio stations can be expected to go on the air, especially in small communities. Educational television is expanding and will seek persons with knowledge in programming, community relations and station management. An increase in cable television networks centers will provide opportunities in professional, technical and maintenance areas. Employment growth in radio and television broadcasting is expected to increase through the mid-1980's.

Theatre arts careers in areas aside from acting are just beginning to unfold. Job opportunities in scene design and technical theatre, and theatre management are expected to increase into the mid-80's with the advent of regional repertory theatres. To pursue a career in these areas, a graduate degree is necessary. A degree in professional theatre may also prepare students for careers in drama therapy, interior decorating and design and home planning.

CURRICULUM GUIDE FOR SPEECH AND THEATRE EDUCATION (Teaching Degree)

BACHELOR OF SCIENCE

Freshman Year

1st Semester	Credit	2nd Semester	Credit
English 100	3	English 101	3
Math 101	3	Math 102	3
History 100	3	History 101	3
Biology	4	Natural Science	3-4
Physical Ed. 101 or		Physical Ed. 102 or	
Health Ed. 200	1-2	Health Ed. 200	1-2
Free Elective (Including		Speech 216	1
ROTC)	1	Speech 250	2
	16-17		16-18

Sophomore Year

1st Semester	Cr. Hrs.	2nd Semester	Cr. Hrs.
**Foreign Languages (German, French,		**Foreign Languages (German, French,	
Spanish or Russian)	3	Spanish or Russian)	3
Humanities 200	3	Humanities 201	3
Speech 301	3	Speech 251 or 252	3
Speech 302	3	Speech 340	3
Psychology 320	3	Free Electives	3
Education 300	2	Behavior Science (Elective	e) 3
	17		18

^{**}Take Elementary through Intermediate Level (12 hours) with no high school background in that particular language. Take Intermediate Level (6 hours) with a high school background in that particular language.

Junior Year

1st Semester	Cr. Hrs.	2nd Semester	Cr. Hrs.
Education 301	2	Education 400	3
Speech 380	3	Education 436	3
Theatre 500 3		Theatre 501	3
Major Electives	3	Major Electives	3
Humanities Electives	3	Free Electives	3
Free Electives	3		15
			15
	17		

Senior Year

1st Semester	Cr. Hrs.	2nd Semester	Cr. Hrs.
Major Electives	9	Education 500	3
Education 637	3	Education 539	3
Free Electives	_3	Education 560	_6
	15		12

TOTAL HOURS: 126-129

CURRICULUM GUIDE FOR SPEECH AND THEATRE ARTS (Non-Teaching)

BACHELOR OF ARTS

Freshman Year

1st Semester	Credit	2nd Semester	Credit
English 100	3	English 101	3
Math 101	3	Math 102	3
History 100	3	History 101	3
Biological Science 100	4	Natural Science	3-4
Physical Education 101		Physical Education 10	2 or
or Health Ed. 200	1-2	Health Ed. 200	1-2
Free Elective (Including		Speech 250	2
ROTC)	3	•	
,			1:-17
	17_19		

Sophomore Year

1st Semester	Cr. Hrs.	2nd Semester	Cr. Hrs.
**Foreign Languages (German, French,		**Foreign Languages (German, French,	
Spanish or Russian)	3	Spanish or Russian)	3
Humanities 200	3	Humanities 201	3
Speech 216	1	Speech 252 or 251	3
Speech 302	3	Free Electives	3
Free Electives	3	Psychology 320	3
Major Electives	3	Behavior Science	3
	16		18

Junior Year

1st Semester	Cr. Hrs.	2nd Semester	Cr. Hrs.
Theatre 500	3	Theatre 501	3
Speech 340	3	Speech 380	3
Humanities Electives	3	Humanities Electives	3
Major Electives	3-6	Major Electives	3-6
Free Electives	3	Free Electives	3
	15-18		15-18

Senior Year

1st Semester	Cr. Hrs.	2nd Semester	Cr. Hrs.
Major Electives Free Electives	9 6	Major Electives Free Electives	3 11
	15		$\overline{14}$

TOTAL HOURS: 125-134

^{**}Take Elementary through Intermediate Level (12 hours) with no high school background in that particular language. Take Intermediate Level (6 hours) with a high school background in that particular language.

CURRICULUM GUIDE FOR SPEECH AND THEATRE ARTS (Mass Communication Option)

BACHELOR OF ARTS

Freshman Year

1st Semester	Credit	2nd Semester	Credit
English 100	3	English 101	3
Math 101	3	Math 102	3
History 100	3	History 101	3
Biological Science 100	4	Physical Science (Physics	
Physical Education 101,		200 or 201)	2-3
102 or Health Ed. 200	1-2	Physical Education 101, 10)2
Free Electives		or Health Education 200	
(Including ROTC)	3	Free Electives (Including ROTC)	2
	17-18	Speech 250	2
		1	16-18

Sophomore Year

1st Semester	Cr. Hrs.	2nd Semester	Cr. Hrs.
**Foreign Languages (German, French,		**Foreign Languages (German, French,	
Spanish or Russian)	3	Spanish or Russian)	3
Humanities 200	3	Humanities 201	3
Speech 216	1	Speech 251 or 252	3
Speech 255	3	Psychology 320	3
English 455	3	Behavior Science	3
Speech 256	3	Major Electives	3
	16		18

^{**}Take Elementary through Intermediate Level (12 hours) with no high school background in that particular language. Take Intermediate Level (6 hours) with a high school background in that particular language.

Junior Year

1st Semester	Cr. Hrs.	2nd Semester	Cr. Hrs.
Speech 340	3	Speech 468	3
Humanities Electives	3	Speech 350	3
Major Electives	3	Speech 351	3
English 461	3	Humanities Electives	3
Theatre 302	3	Major Electives	3-6
Free Electives	3	·	
			15-18
	18		

Senior Year

1st Semester	Cr. Hrs.	2nd Semester	Cr. Hrs.
English 639 Free Electives Speech 636	$ \begin{array}{c} 6 \\ 3 \\ 3 \\ \hline 12 \end{array} $	Free Electives English 640	$\frac{12}{\frac{3}{15}}$

TOTAL HOURS: 127-133

CURRICULUM GUIDE FOR SPEECH COMMUNICATION AND THEATRE ARTS (Speech Pathology Option)

BACHELOR OF ARTS

Freshman Year

1st Semester	Credit	2nd Semester	Credit
English 100	3	English 101	3
Math 101	3	Math 102	3
History 100	3	History 101	3
Biological Science 100	4	Zoology 160	4
Physical Education 101,		Physical Education 101,	102
101 or Health Ed. 200	1-2	or Health Ed. 200	1-2
Speech 250	2	Music 216	3
Free Elective			17.10
(Including ROTC)	1		17-18
	17-18		

Sophomore Year

1st Semester	Cr. Hrs.	2nd Semester	Cr. Hrs.
**Foreign Languages (German, French,		**Foreign Languages (German, French,	
Spanish or Russian)	3	Spanish or Russian)	3
Humanities 200	3	Art 224 or (Philosophy	
		260)	2-3
Psychology 320	3	Humanities 201	3
Speech 340	3	Electives	4
Sociology 100	3	English 300	3
Speech 380	_3	Speech 216	1
	18		16-17

Junior Year

1st Semester	Cr. Hrs.	2nd Semester	Cr. Hrs.
Speech 251	3	Speech 404	3
Speech 407	3	Speech 425	3
Psychology 322	3	Major Electives	
Major Electives		(Speech 252, 20)	3
(Speech 415, 636)	3	Free Electives	6
Free Electives	6		_
			15
	18		

Senior Year

1st Semester	Cr. Hrs.	2nd Semester	Cr. Hrs.
Speech 430	3	Speech 450	3
Speech 431	3	Speech 510	3
Free Electives	3	Free Electives	3
Speech 550	_3	Speech 551	_3
	12		12

TOTAL HOURS: 125-128

^{**}Take Elementary through Intermediate Level (12 hours) with no high school background in that particular language. Take Intermediate Level (6 hours) with a high school background in that particular language.

CURRICULUM GUIDE FOR PROFESSIONAL THEATRE MAJOR BACHELOR OF ARTS

Freshman Year

1st Semester	Credit	2nd Semester	Credit
English 100	3	English 101	3
Math 101	3	Math 102	3
History 100	3	History 101	3
Biological Science 100	4	Physical Science 100	4
Speech 216	1	Speech 250	2
Theatre 300	1	Elective (Including	
Elective (Including ROT)	C) 1	ROTC)	1
	16		16
	16		16

Sophomore Year

1st Semester	Cr. Hrs.	2nd Semester	Cr. Hrs.
**Foreign Languages	3	**Foreign Languages	3
Humanities 200	3	Humanities 201	3
Theatre 301	3	Theatre 300	1
Theatre 302	3	Theatre 441	3
Psychology 320	3	Physical Education 451	1
Physical Education 229	1	Major Electives	3
,		Art 100	3
	16		
			17

Junior Year

1st Semester	Cr. Hrs.	2nd Semester	Cr. Hrs.
Foreign Language	3	Foreign Language	3
Theatre 500	3	Theatre 501	3
Theatre 400	3	Theatre 440	3
Speech 340	3	Major Electives	3
Theatre 300	1	Music 216	3
Major Electives	3		-
Music 119	1		15
	17		

^{**}Take Elementary through Intermediate Level (12 hours) with no high school background in that particular language. Take Intermediate Level (6 hours) with a high school background in that particular language.

Senior Year

1st Semester	Cr. Hrs.	2nd Semester	Cr. Hrs.
Theatre 656	3	Theatre 650	6
Major Electives	3	Major Electives	3
Free Electives	6	Behavior Science	3
	12	Free Electives	3
	12		
			15

TOTAL HOURS: 124



SCHOOL OF BUSINESS AND ECONOMICS





School of Section 8 Business and Economics

Quiester Craig, Dean Danny Pogue, Assistant Dean

OBJECTIVES

A primary objective of the School of Business and Economics is to develop business leaders who are capable of coping with new technologies and social progress. The scope of the School's programs includes curricula based primarily upon key concepts and skills necessary for decision-making and problemsolving roles in government, business, education, and industry. The School of Business and Economics also serves to perpetuate general understanding and appreciation for the interrelationships of the national as well as world environments.

ACCREDITATION

The undergraduate business programs of the School of Business and Economics are accredited by the American Assembly of Collegiate Schools of Business (AACSB).

DEGREES OFFERED

Students may engage in a major course of study leading to the Bachelor of Science degree from the following: Accounting, Administrative Services, Business Administration (with areas of study in banking and finance, management, or marketing), Business Education - Basic, Business Education - Comprehensive, Economics, and Transportation. The programs within the School of Business and Economics are divided into four parts, viz., general education, business and economics core requirements, courses for the major program of study, and necessary electives. At least 40% of each program must consist of courses offered outside of the School of Business and Economics.

COURSE LOAD

The normal course load is fifteen to seventeen (15-17) credit hours. A full-time undergraduate student is required to carry a minimum of twelve (12) credit hours. Students majoring in the School of Business and Economics may not enroll for more than eighteen hours without the approval of the Department Chairperson and the Dean.

GENERAL PROGRAM REQUIREMENTS

The student is held responsible for the selection of courses in conformity with the curriculum of his/her choice. A student who enters the School of Business and Economics has the privilege of graduating under the provisions of the bulletin current upon admission provided all requirements are completed within six years. If all requirements are not completed within six years after admission, the student is expected to conform to the bulletin requirements

specified for the class with which graduation is anticipated.

The applicant for graduation must have earned a minimum of 124 semester hours excluding deficiency courses and remedial work with a cumulative grade point average of 2.00 or better for all courses undertaken. Students must also present a minimum cumulative grade point average of 2.00 in the major field of study which includes the minimum of a "C" grade in at least 8 (24 hours) of the 10 (30 hours) courses listed as major program requirements in the applicable University Bulletin for the selected courses of study. (Economics majors should check program for major program requirements).

PROFICIENCY EXAMINATIONS

Students who have had some training or experience in certain fields offered in the School of Business and Economics will be given an opportunity to take an examination in such fields with the permission of the Chairperson of the Department and the approval of the Dean of the School of Business and Economics. A student who passes a proficiency examination is given credit toward graduation, provided that the course is acceptable for his/her curriculum. Credit is given only if a grade of "C" is made on the examination. "P" is the grade recorded on the student's record. No official record is made of failures on these examinations.

Proficiency examinations are given under the following restrictions:

- 1. They may be taken only by persons who are in residence at the University.
- 2. They may not be taken to raise grades or remove failures in courses
- 3. They may be taken only once in the same course

SENIOR RESIDENCE REQUIREMENT

Students must complete a minimum of three semesters as a full-time student in residence at the University which includes the two semesters prior to graduation. At least one half of the student's credit in the major field must be earned at the University. Exception to either of these provisions may be made upon the recommendation of the Chairperson of the student's major department and the approval of the Dean of the School of Business and Economics.

DEPARTMENTAL REQUIREMENTS

All business programs require the completion of Business and Economics Core requirements including the following courses: Acc 221, 222, BE 360, 361, 422, 430, 451, 453, 481, 520, and Econ. 415 (BA 550 required for accounting majors, BE 379 required for Business Education majors instead of Econ. 415). A further description of each department and courses offered is presented below.

DEPARTMENT OF ACCOUNTING

Joseph Boyd, Chairperson

OBJECTIVES

Successful practice of accounting today requires both technical competence in accounting and thorough understanding of the economic environment in which accounting operates. Only by understanding the objectives and constraints of the economics environment is the accountant able to apply technical competence toward the solution of business problems. The objectives of the Accounting Department are to present a broad exposure to the related business disciplines and to provide quality instruction in the methodology and underlying theory of the specialized fields of accounting. The curriculum also provides the opportunity for interested students to prepare for the CPA Examination.

DEGREE OFFERED

Accounting - B.S.

GENERAL PROGRAM REQUIREMENTS

The major in Accounting must complete a minimum of 124 semester hours consistent with the curriculum guide presented below.

DEPARTMENTAL REQUIREMENTS

Majors in the department must earn a minimum of a "C" grade in at least 8 (24 hours) of the 10 (30 hours) courses listed as major program requirements for Accounting in the applicable University Bulletin. Also, students must earn a minimum grade of "C" in each of the following four Accounting courses: Accounting 221, 222, 441, and 442.

CAREER OPPORTUNITIES

Students majoring in Accounting will be prepared for careers in public and/or corporate accounting, business and government, and receive quality instruction for a background for graduate study.

CURRICULUM GUIDE FOR THE MAJOR IN ACCOUNTING

Freshman Year

Course and Number	Fall Semester Credit	Spring Semester Credit
English 100, 101	3	3
Mathematics 111, 112	4	4
Social Science (Elective) ¹	6	-
Natural Science (Elective) ²	3-4	3-4
Physical Education	1	1
Humanities Electives ³	-	3
Business Administration 220	-	3
	17-18	17-18

Sophomore Year

Fall Semester Course and Number	Spring Semester Credit	Credit
Accounting 221, 222	3	3
Economics 300, 301	3	3
Humanities (Elective) ³	3	-
Economics 305, 310	3	3
Psychology 320	3	-
Speech 250	2	-
Business Education 360	-	3
Business Administration 361	-	3
Electives (Nonbusiness) ⁴	<u>-</u>	2
	17	17

¹Recommended Courses: History 100; 101; 215; 216; 310; 311. Georgraphy 200 and 322; Political Science 200; Sociology 100 and 200.

²Recommended Courses: Biological Science 100; Physical Science 100; Introduction to Astronomy 101; Survey of Physics 201.

³Recommended Courses: Humanities 200; 201; and courses from Art, Music, and/or Literature.

⁴Recommended Courses: Speech 216; Health Education 200; PE 441, and other courses from Physical Education.

Junior Year

Course and Number Accounting 441, 442	Fall Semester Credit 3	Spring Semester Credit 3
Accounting 444, 443	3	3
Business Administration 422, 430	3	3
Business Administration 453, 550	3	3
Business Administration 481, 482	3	3
101, 102	$\frac{3}{15}$	15

Senior Year

Fall Semester Spring Semester

3 3 3

30

Course and Number	Credit	Credit
Accounting 561	3	
Accounting 545	3	-
Accounting Electives ⁵	-	6
Business Administration		
451, 452	3	3
Business Administration 520	-	3
Nonbusiness Electives ⁶	6	<u>-</u>
	15	12
*Major Program Requirements:	Sem	ester Hours
Accounting 221—Principles of Accounting	ng I	3
Accounting 222—Principles of Accounting		3
Accounting 441—Intermediate Accounting	ng I	3
Accounting 442—Intermediate Accountin	g II	3
Accounting 443—Income Tax Accounting	ng	3
Accounting 444—Cost Accounting		3

Accounting 545—Advanced Accounting Accounting 561—Auditing Principles

Bus. Adm. 451—Business Law I Bus. Adm. 453—Business Finance

⁵ From Accounting 445, 446, 590, and 643; Math 240; BA 455 and 552. Students interested in taking the CPA Exam should elect Accounting 445, 590 and 643.

⁶ Recommended Courses: English 300; Speech 251; and additional courses in Mathematics.

^{* &}quot;ALL MAJORS MUST EARN A MINIMUM OF A "C" GRADE IN AT LEAST 8 (24 HOURS) OF THE 10 (30 HOURS) COURSES LISTED AS MAJOR PROGRAM REQUIREMENTS IN THE APPLICABLE UNIVERSITY BULLETIN FOR THE SELECTED AREA OF THE STUDY. ALSO, THE STUDENT MUST EARN A MINIMUM GRADE OF "C" IN EACH OF THE FOLLOWING FOUR ACCOUNTING COURSES: 221, 222, 441, and 442."

DEPARTMENT OF BUSINESS ADMINISTRATION

Georgia Bowser, Acting Chairperson

OBJECTIVES

The objectives of the Business Administration Department are to provide fundamental knowledge concerning the field of business administration by emphasizing the tools essential for problem solving and decision making and to develop competencies necessary for accomplishing managerial goals.

DEGREES OFFERED

Business Administration—B.S.

GENERAL PROGRAM REQUIREMENTS

The students majoring in Business Administration must complete a minimum of 124 hours consistent with the curriculum guide for the area of study selected.

DEPARTMENTAL REQUIREMENTS

Majors in the Department of Business Administration must select an area of study in banking and finance, management, or marketing. They must earn a minimum grade of "C" in 8 (24 hours) of the 10 (30 hours) courses identified as major program requirements in the applicable University Bulletin for the selected area of study.

CAREER OPPORTUNITIES

A degree in business administration equips students with administrative skills and competencies important for careers in such specific fields as banking and finance, management, and marketing. Flexibility within degree programs also prepares students for administrative based careers in public, private, and entrepreneurial activity.

CURRICULUM GUIDE FOR THE MAJOR IN BUSINESS ADMINISTRATION Bachelor of Science

The following courses will be taken by all Business Administration Majors:

Freshman Year

Course and Number	Fall Semester Credit	Spring Semester Credit
English 100, 101	3	3
Social Science electives ¹	3	3
Natural Science electives ²	3-4	3-4
Mathematics 111, 112	4	4
BA 220 - Bus. Environment	3	-
Health & Physical Ed. electives		3
	16-17	16-17

Sophomore Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Economics 300, 301	3	3
Humanities electives ³	3	3
Economics 305, 310	3	3
Accounting 221, 222	3	3
Speech 250	2	_
BA 361 - Intro. to Data Processing	-	3
Psychology 320	3	-
. 0.	17	15

¹Recommended Courses: History 100; 101; 215; 216; 310; 311; Geography 200 and 322; Political Science 200; Sociology 100 and 200.

²Recommended Courses: Biological Science 100; Physical Science 100; Introduction to Astronomy 101; Survey of Physics 201.

³Recommended Courses: Humanities 200; 201; and courses from Art, Music, and/or Literature; Foreign Languages.

BANKING AND FINANCE

Junior Year

Course and Number	Fall Semester Credit	Spring Semester Credit
BA 481, 482	3	3
BA 422, BE 360	3	3
BA 453, 455		3
Accounting 441, 442	3	3
Economics 415	3	-
BA 550	-	3
	15	15

Course and Number	Fall Semester Credit	Spring Semester Credit
BA 430	3	_
BA 451, 452	3	3
BA 551, 520	3	3
Finance Electives	31	31
Finance Electives	<u> </u>	32
Nonbusiness Electives	3	3
	15	15

Major Program Requirements:	Semester	Hours
BA 422 - Introduction to Management	3	
BA 452 - Business Law II	3	
BA 453 - Business Finance	3	
BA 455 - Investments	3	
BA 550 - Financial Management	3	
BA 551 - Financial Markets	. 3	
Accounting 441 - Intermediate Accounting I	3	
Accounting 442 - Intermediate Accounting II	3	
Economics 310 - Advanced Statistics	3	
Economics 415 - Money and Banking	3	-
	30)

¹Select two courses from the following: BA 454; BA 457; Economics 410; 420, and 510; additional courses in accounting.

²Select one course from the following: BA 552; BA 555; BA 557.

MANAGEMENT

Junior Year

Course and Number	Fall Semester Credit	Spring Semester Credit
BA 481, 482	3	3
BA 422, BE 360	3	3
BA 453, 550	3	3
BA 430, 539	3	3
Accounting 446	3	-
Economics 415	_	3
	15	15

Course and Number	Fall Semester Credit	Spring Semester Credit
BA 520	-	3
BA 451, 452	3	3
BA 522	3	-
Management Electives ³	6	3
Non-Business Electives	3	6
	15	15

Major Program Requirements:	Semester Hours
Accounting 446 - Managerial Accounting	3
BA 422 - Introduction to Management	3
BA 430 - Marketing	3
BA 539 - Marketing Management	3
BA 452 - Business Law II	3
BA 453 - Business Finance	3
BA 481 - Management Science	3
BA 522 - Personnel Management	3
BA 550 - Financial Management	3
Economics 310 - Advanced Statistics	3
	30

³ Select nine hours from courses in the School of Business and Economics or additional courses in English and Speech in consultation with Advisor.

MARKETING

Junior Year

Course and Number	Fall Semester Credit	Spring Semester Credit
	G / 00000	Creait
BA 481, 482	3	3
BA 430, 431	3	3
BA 422, 437	3	3
BA 453	3	-
Accounting 446	3	-
Economics 415	_	3
BE 360		3
		_
	15	15

Course and Number	Fall Semester Credit	Spring Semester Credit
BA 520	_	3
BA 451, 452	3	3
BA 520	-	3
BA 538, 539	3	3
Marketing Electives ⁴	3	3
Non-Business Electives	6	3
	15	- 15

Major Program Requirements:	Semester Hours
BA 422 - Introduction to Management	. 3
BA 430 - Marketing	3
BA 431 - Marketing Communications	3
BA 437 - Consumer Behavior	3
BA 538 - Marketing Research	3
BA 539 - Marketing Management	. 3
BA 452 - Business Law II	3
BA 481 - Management Science I	3
Accounting 446 - Managerial Accounting	3
Economics 310 - Advanced Statistics	3
	30

⁴Select six credit hours from the following: BA 420; BA 433; Psychology 420; courses in Transportation; and additional courses in Speech/English.

DEPARTMENT OF BUSINESS EDUCATION AND ADMINISTRATIVE SERVICES

Meada Gibbs, Chairperson

OBJECTIVES

The objectives of the Department of Business Education and Administrative Services are to provide quality instruction for the development of basic and comprehensive business teachers and to prepare students for managerial-level service roles in business, government, and the professions.

DEGREES OFFERED

Administrative Services - B.S. Basic Business Education - B.S. Comprehensive Business Education - B.S.

GENERAL PROGRAM REQUIREMENTS

Students majoring in programs in the Department of Business Education and Administrative Services must complete 124-128 semester hours consistent with the curriculum guides presented below.

DEPARTMENTAL REQUIREMENTS

Majors in the Department of Business Education and Administrative Services must earn a minimum grade of "C" in 8 (24 hours) of the 10 (30 hours) courses identified as major program requirements in the applicable University Bulletin for the selected area of study.

The business teacher education curriculum meets the certification requirements for the State of North Carolina. Each student is encouraged to take the National Teachers Examination. The Business Education and Administrative Services Department will be guided by the State's certification procedure in force. ¹

To be eligible for student teaching in both comprehensive business education and basic business education, the student must have met the following requirements:

- 1. Acquired Senior Standing
- Completed three-fourths of the number of hours required in business and economic courses.

¹Business Teacher Education majors must meet the requirements for admission to the Teacher Education program.

- Completed three-fourths of the number of hours required in his/her subject matter major.
- Attained an average of 2.00 or better on all work undertaken in the University, on all professional education courses undertaken, and on all courses undertaken in the subject matter major.
- 5. Possesses a personality deemed necessary for successful teaching.

ACCREDITATION

Business Teacher Education Programs are accredited by the National Council for Accreditation of Teacher Education and approved by the State Department of Public Instruction.

CAREER OPPORTUNITIES

Depending on the major selected, graduates of the Department of Business Education and Administrative Services are qualified for career opportunities as business teachers in middle and secondary grades, clerical and office administrators, and other managerial personnel in business, industry, and the government.

CURRICULUM GUIDE FOR BASIC BUSINESS EDUCATION Bachelor of Science

Freshman Year

Course and Number	Fall Semester Credit	Spring Semester Credit
English 100, 101	3	3
Mathematics 111, 112	4	4
Natural Science Electives	3-4	3-4
History, 100, 101	3	3
Business Administration 220	3	
Business Education 302 ¹	-	2
Physical Education		1
	16-17	16-17

¹Students who do not pass the Proficiency Test for Beginning Typewriting should enroll in BE 301, the prerequisite for BE 302.

Sophomore Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Economics 300, 301	3	3
Accounting 221, 222	3	3
Psychology 320	-	3
Humanities 200, 201	3	3
Speech 250	2	-
Education 300, 301	2	2
Business Education 334	2	-
Health Education 200	2	-
Business Administration 361	-	3
	17	17

Junior Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Business Administration 422	3	-
Accounting 446	3	-
Economics 305	3	-
Education 400	-	3
Business Administration 453	3	-
Business Administration 481	-	3
Business Education 360	-	3
Business Education 379	-	3
Business Administration 430	-	3
Electives	3	-
	15	15

Course and Number	Fall Semester Credit	Spring Semester Credit
Business Education 574	1	_
Education 637	-	3
Education 500	-	3
Education 560	-	6
Business Administration 451	3	_
Business Education 575-577	3	_
Business Administration 520	3	_
Electives	6	_
	_	
	16	12

Major	Program	Requirements	Semester	Hours
B.E.	575-57	7 Methods of Teaching the Business Subjects	3	
Acct	. 446 -	Managerial Accounting	3	
B.A	. 422 -	Introduction to Management	3	
B.A	. 430 -	Marketing	3	
Ecor	ı. 305 -	Elementary Statistics	3	
B.E.	453 -	Business Finance	3	
		Business Communication		
B.A	. 361 -	Introduction to Data Processing	3	
B.A	. 451 -	Principles of Business Law I	3	
B.E.	379 -	Personal Finance	3	
			30)

CURRICULUM GUIDE FOR COMPREHENSIVE BUSINESS EDUCATION

Bachelor of Science

Freshman Year

Course and Number	Fall Semester Credit	Spring Semester Credit
English 100, 101	3	3
Mathematics 111, 112	4	4
Natural Science Electives	3-4	3-4
History, 100, 101	3	3
Business Administration 220	3	- '
Business Education 302 ¹	-	2
Physical Education		1
	16-17	16-17

Sophomore Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Economics 300, 301	3	3
Accounting 221, 222	3	3
Business Administration 361	-	3
Speech 250	2	-
Business Education 332 ²	-	3
Business Education 334	2	
Education 300, 301	2	2
Humanities 200, 201	3	3
Health Education 200	2	
	17	17

¹Students who do not pass the Proficiency Test for Beginning Typewriting should enroll in BE 301, the prerequisite for BE 302.

²Students who do not pass the Proficiency Test for Shorthand I should enroll in BE 331, the prerequisite for BE 332.

Junior Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Business Administration 422	3	-
Business Education 360	-	3
Business Administration 453	3	-
Business Administration 481	-	3
Business Administration 430	-	3
Economics 305	3	-
Psychology 320	3	-
Business Education 447	3	-
Education 400	-	3
Business Education 379	-	3
Electives	2	-
	17	15

Course and Number	Fall Semester Credit	Spring Semester Credit
Business Education 574	1	-
Education 637	-	3
Business Administration 451	3	-
Education 500	-	3
Education 560	-	6
Business Education 573	3	-
Business Education 575-578	4	_
Business Administration 520	3	-
Electives	3	<u>-</u>
	17	12

Major Program Requirements	Semester	Hours
B.A. 453 - Business Finance	3	
B.A. 430 - Marketing		
B.E. 360 - Business Communication	3	
Econ. 305 - Elementary Statistics	3	
B.A. 361 - Introduction to Data Processing		
B.E. 332 - Shorthand II		
B.E. 447 - Transcription	3	
B.E. 573 - Executory Administration	3	
B.E. 575-578 - Methods of Teaching the Business Subjects	4	
B.E. 302 - Intermediate Typewriting	2	
	30	-

CURRICULUM GUIDE FOR ADMINISTRATIVE SERVICES Bachelor of Science

Freshman Year

Course and Number	Fall Semester Credit	Spring Semester Credit
English 100, 101	3	3
Mathematics 111, 112	4	4
Natural Science Elective	3-4	3-4
Business Administration 220	3	-
Business Education 302 ¹	-	2
History 100, 101	3	3
Physical Education		1
	16-17	16-17

Sophomore Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Humanities 200, 201	3	3
Psychology 320	3	_
Business Administration 361	_	3
Accounting 221, 222	3	3
Speech 250	-	2
Business Education 332 ²	-	3
Business Education 334	2	_
Economics 300, 301	3	3
Health Education 200	2	-
	16	17

¹Students who do not pass the Proficiency Test for Beginning Typewriting should enroll in BE 301, the prerequisite for BE 302.

²Students who do not pass the Proficiency Test for Shorthand I should enroll in BE 331, the prerequisite for BE 332.

Junior Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Business Administration 453	3	-
Business Administration 481	-	3
Business Education 360	-	3
Business Administration 430	-	3
Economics 305	3	-
Business Education 447	3	-
Business Administration 422	3	-
Business Administration 420	-	3
Economics 415	-	3
Electives	3	-
	15	15
	1)	1)

Course and Number	Fall Semester Credit	Spring Semester Credit
Business Education 451	3	-
Business Education 573	3	-
Business Administration 520	-	3
Business Education 574	1	-
Business Administration 522	-	3
Business Education 568	3	-
Electives (Nonbusiness)	6	6
	16	12

Major Program Requirements	Semester Hours
B.E. 568 - Office Organization and Management	3
B.A. 361 - Introduction to Data Processing	3
B.E. 422 - Introduction to Management	
B.E. 447 - Transcription I	
B.E. 573 - Executory Administration	
B.A. 453 - Business Finance	3
B.A. 522 - Personnel Management	
B.E. 360 - Business Communication	
Econ. 305 - Elementary Statistics	3
Acct. 222 - Principles of Accounting	
	30

DEPARTMENT OF ECONOMICS

Basil Coley, Chairperson

OBJECTIVES

The objectives of the Department of Economics are to develop the student's ability to understand and use economic principles and concepts to identify, analyze, and solve problems associated with the economy, and to develop potential for leadership positions in business, education, and the government.

DEGREES OFFERED

Economics - B.S. Transportation - B.S.

GENERAL PROGRAM REQUIREMENTS

Two program options are available to majors in Economics: (1) business oriented and (2) general economics. Economics and Transportation majors are required to complete a minimum of 124 hours for a baccalaureate degree consistent with the curriculum guide for the program selected.

DEPARTMENTAL REQUIREMENTS

Students majoring in programs in Economics must earn a minimum grade of "C" in all Economics courses listed as Major Program Requirements. Economics 300 and 301 are prerequisites to all courses in Economics.

CAREER OPPORTUNITIES

The Economics major is prepared for careers in government services, business, and industry, and is provided with the educational background for graduate study and the study of law. The Transportation major is prepared for careers in carrier and physical distribution management with railroads, motor lines, water carriers, airlines, other industries and the government.

CURRICULUM GUIDE FOR THE MAJOR IN ECONOMICS (BUSINESS)

Bachelor of Science

Freshman Year

Course and Number	Fall Semester Credit	Spring Semester Credit
English 100, 101	3	3
Mathematics 111, 113	4	4
History 100, 101	3	3
Biological Science	4	-
Physical Science	-	4
Business Administration 220	3	-
Physical Education	_	1
Health Education 200	_	2
	17	17

Sophomore Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Accounting 221, 222	3	3
Physical Education, Speech 250	1	2
Humanities	3	3
Psychology 320		
Business Administration 361	3	3
Economics 300, 301	3	3
Economics 305, 310	3	3
	16	17

Junior Year

Fall Semester Credit	Spring Semester Credit
3	3
3	3
3	-
-	3
3	3
3	3
15	15
	Credit 3 3

Senior Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Business Administration		
481, 520	3	3
Business Administration 451,		
Economics 525	3	3
Economic Elective	3	3
Electives	6	6
(non-business and non-economics)		_
	15	15

Major	Program Requirements	Semester	Hou
EC	300 - Principles of Economics (Micro)	3	
	301 - Principles of Economics (Macro)	3	
EC	305 - Elementary Statistics	3	
	310 - Advanced Statistics	3	
	410 - Intermediate Economics Theory	3	
EC	412 - Quantitative Analysis	3	
EC	415 - Money and Banking	3	
EC	420 - National Income Analysis	3	
EC	525 - Economics Seminar	3	
BA	361 - Introduction to Data Processing	3	
		30)

CURRICULUM GUIDE FOR THE MAJOR IN ECONOMICS (GENERAL) Bachelor of Science

Freshman Year

Course and Number	Fall Semester Credit	Spring Semester Credit
English 100, 101	3	3
Mathematics 111, 113	4	4
History 100, 101	3	3
Biological Science	4	-
Physical Science	-	4
Business Administration 220, ROTC		
or elective	3	3
	17	17

Sophomore Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Economics 305, 310	3	3
Physical Education	1	1
Health Education 200, Speech 250 .	2	2
Humanities 200, 201	3	3
Economics 300 (formerly 302), 301.	3	3
Psychology 320	3	-
Social Science Elective	_	3
	15	15

Junior Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Foreign Language Economics 410, Business	3	3
Administration 361 or	2	2
Mathematics 240 Economics 412 (Formerly 304)	3	<i>5</i>
Economics 420	-	3
Economics Electives	3	3
Social Science or Math Electives	3	-
Economics 415	_	3
	15	15

Course and Number	Fall Semester Credit	Spring Semester Credit
Economics 525	-	3
Electives ^a	15	12
	15	15

^aFifteen semester hours should be taken from the following disciplines: Mathematics, Business Administration, Accounting, Political Science, Agricultural Economics, Sociology, Anthropology, English or Education in consultation with adviser.

И	lajor	Program Requirements	Semester	Hours
	EC	300 - Principles of Economics (Micro)	3	
	EC	301 - Principles of Economics (Macro)	3	
		305 - Elementary Statistics	3	
		310 - Advanced Statistics	3	
		410 - Intermediate Economics Theory	3	
		412 - Quantitative Analysis	3	
	EC	415 - Money and Banking	3	
		420 - National Income Analysis	3	
		525 - Economics Seminar	3	
		361 - Introduction to Data Processing or		
		TH 240 - Introduction to the Programming of		
		Digital Computers	3	
			30	

MANPOWER CONCENTRATION FOR ECONOMICS MAJORS

The Department of Economics offers a manpower concentration which provides an understanding of manpower planning, manpower program evaluation, and manpower administration. In this concentration, students gain expertise in coping with problems of employment and additional skills for careers in state, city and county government, federal agencies, private industry, as well as community manpower agencies.

Students interested in the manpower concentration should complete the following core courses: Economics 305 or Psychology 322; Economics 602, 603; Business Administration 522; Sociology 302, 501 or 601; and Psychology 445. Two electives (6 hours) must be selected in consultation with the appropriate adviser.

CURRICULUM FOR THE MAJOR IN TRANSPORTATION Bachelor of Science Freshman Year

Fall Semester Spring Semester Course and Number Credit Credit English 100, 101 Mathematics 111, 113 4 4 Biological Science 4 Physical Science History 100, 101 Business Administration 220 Health Education 200 or 2 Physical Activity

Sophomore Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Economics 300, 301	3	3
Humanities 200, 201	3	3
General Psychology 320	3	_
Speech 250	2	_
Accounting 221, 222	3	3
Economics 305, 310	3	3
Transportation 360	_	3
	17	15

Junior Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Business Administration		
422, 451	3	3
Business Administration 481	3	_
Business Administration		
361, 453	3	3
Economics 415	_	3
Business Administration		
430, BE 360	3	3
Economics 425	3	_
Transportation 450	-	3
	15	15

Course and Number	Fall Semester Credit	Spring Semester Credit
Transportation 650	3	_
Business Administration 520	_	3
Economics 626	3	_
Electives (not from business		
or economics)	3	6
Transportation Electives	6	6
•	15	15

Major Program Requirements	Semester Hours
TRAN 360 - Introduction to Transportation	3
TRAN 450 - Motor Carrier Management	3
TRAN 650 - Transportation Law	3
EC 310 - Advanced Statistics	3
EC 425 - Economics of Transportation	3
EC 625 - Physical Distribution	3
Four courses from TRAN 460, 660, BA 470	
BA 610, EC 410, EC 501, EC 599	12
	30

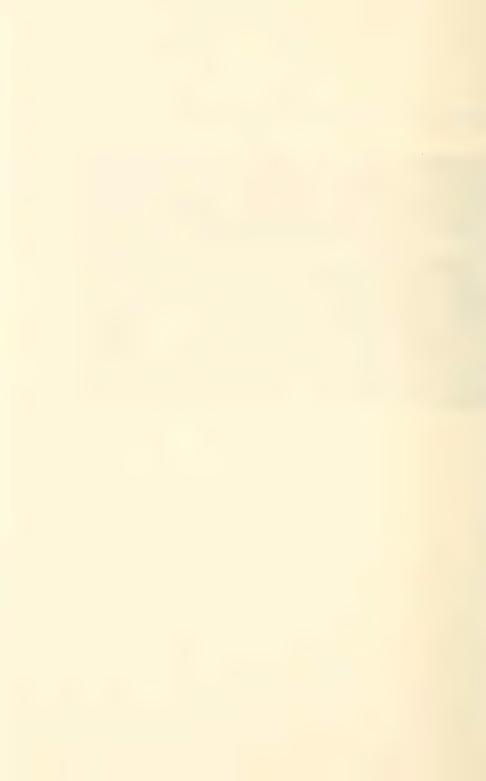
TRANSPORTATION MINOR

The Department of Economics administers a minor in Transportation which provides an understanding of urban and rural transportation planning with a special emphasis on public transport. In this minor, students are prepared for careers in transportation agencies of federal, state, county and city governments or in related private industry. Any major may complete the requirements of this minor.

Students interested in the transportation minor must successfully complete 18 semester hours from the following courses: Business Administration 470, Economics 425; Twelve (12) hours of electives from Political Science 448; Mechanical Engineering 461 and 462; Architectural Engineering 566 and 567; Engineering 660; Business Administration 610.

SCHOOL OF EDUCATION





School of Education

Section 9

S. Joseph Shaw, Dean and Director of Teacher Education

The School of Education provides curricula for students to prepare for teaching careers in the elementary (K-6) and secondary schools of the state and for other professional careers in industry and government. The programs of study are planned to allow the students to attain competence in both specialized and general areas of Education.

The School of Education includes the following departments: Administration, Supervision and Postsecondary Education; Adult Education and Community Services; Educational Media; Educational Psychology and Guidance; Elementary Education and Reading; Health, Physical Education and Recreation; and Secondary Education and Curriculum. The Division of Industrial Education and Technology is comprised of the following departments: Industrial Education; Industrial Technology; and Safety and Driver Education. This Division is an integral part of the School of Education.

All professional teacher education programs are administered and supervised by the School of Education. The Schools of Education and Graduate Studies cooperate with the supervision of graduate teacher education programs. Moreover, the School of Education serves as the central agency for administering all teacher education programs for undergraduates.

The School of Education offers programs leading to the Bachelor of Science degree in Health and Physical Education, Industrial Arts Education, Safety and Driver Education, Vocational Industrial Education, Educational Media and Early Childhood Education.

In addition to the aforementioned programs, upon satisfactory completion of an undergraduate program offered by other schools and departments in cooperation with the School of Education, the student is eligible to receive the degree of Bachelor of Science in one of the following areas: Agricultural Education, Art Education; Biology Education; Business Education; Chemistry Education; English Education; French Education; History Education; Home Economics Education; Mathematics Education; Music Education; Physics Education; Social Studies Education; and Speech and Theatre Education. The graduate courses and major may be found in the Graduate Bulletin.

THE TEACHER EDUCATION PROGRAM

The Teacher Education Program became accredited in May, 1977, by the National Council for the Accreditation of Teacher Education. The Industrial Technology Program became accredited in November, 1977, by the National Association of Industrial Technology. The Media Program was accredited in May, 1977, by the Association of Educational Communications and Technology.

The program of teacher education seeks to improve the quality of education available to the youth of North Carolina through improved preparation of

teachers and other school personnel including administrators, guidance counselors and supervisors. To that end, it offers both undergraduate and graduate programs of professional study which represent a continuum with similar general goals. The program seeks, therefore, to realize these goals:

- to prepare persons to take their places as competent members of the profession of education; and
- to provide opportunities for advanced study for school personnel already established in education.

In order to carry out general goal "number one" of the Teacher Education Program as listed above, these objectives have been established:

- Plan experiences for students in teacher education which will include the development of persons as individuals as well as specialists in a chosen academic area.
- 2. Plan learning environments conducive to appropriate stimulation for developing needed competencies in the following areas:
 - a. personal development
 - b. social development
 - c. professional development
 - d. citizenship maturity
- 3. Provide the highest level of instructional development by way of well-qualified teaching and research personnel who can provide integrated experiences for teacher education students, that will make it possible for them to gain personal, social and academic competencies in the practice of the education profession.
- 4. Design an organizational structure to delineate and describe those competencies which will assure for teacher education students a quality experience specifically related to the vocational specialty they will be expected to practice.
- Plan all program development, evaluation, and supervision so that experiences gained are clearly oriented to the preservice dimension of the Teacher Education Program.

As the teacher education unit observes general goal "number two", the following objectives have been established:

- Plan programs for graduate level students which will involve competencies already developed and which are being practiced, and infuse additional high level experiences that will give definite meaning to the competencies being sought.
- Provide a learning environment which will stimulate in advanced students
 the desire to delineate and articulate those competencies in their respective specialties that will insure for them a high level of performance
 in the practice of their chosen vocation.

- 3. Emphasize those competencies which are necessary for all advanced students in education. Such competencies would allow advanced students to have extensive and intensive experiences in research.
- 4. Plan and assess measurable competencies of advanced students which will permit these students to attain levels of leadership commensurate with graduate level expectations.

The offices of Registration and Records and Director of Teacher Education are the central agencies vested with the authority and responsibility to recommend to the State Department of Public Instruction, students who are applying for certification in the following fields:

- 1. Agricultural Education
- 2. Art Education
- 3. Biology Education
- 4. Business Education
- 5. Chemistry Education
- 6. Early Childhood Education
- 7. English Education
- 8. French Education
- 9. Health and Physical Education
- 10. History Education

- 11. Home Economics Education
- 12. Industrial Arts Education
- 13. Mathematics Education
- 14. Media Education
- 15. Music Education
- 16. Physics Education
- 17. Safety and Driver Education
- 18. Social Studies Education
- 19. Speech and Theatre Education
- 20. Vocational Industrial Education

In recognition of this function, the approval or endorsement of the department providing courses in the subject matter areas in which the candidate is to be certified must be secured prior to the approval or endorsement of the Director. The University reserves the right to refuse to recommend any applicants for certificates when they are deficient in mental or physical health, scholarship, character, or other qualifications deemed necessary for success in the profession of education.

The program in teacher education is divided into three separate but interrelated phases: (1) general education; (2) subject-matter specialization; and (3) professional education. Beginning in 1982, the Quality Assurance Program in Teacher Education will become operative.

GENERAL EDUCATION

The general education phase of the Teacher Program functions to provide experience and learning which meet the fundamental needs of all teachers, both in the role of teacher and citizen in a democracy. General education provides for the student the understanding, the knowledge, the appreciation, and the sensitivity attainable through the study of a broad range of materials and concepts ranging across the humanities, the arts, the social sciences, the natural sciences and mathematics. It provides a broad understanding of the cultural heritage and of the physical and social environments.

SUBJECT-MATTER SPECIALIZATION

Experiences of students in the subject-matter specialization area are designed to develop a high level of subject competence in those who later will seek

certification in their respective specialities. Subject-matter specialization provides opportunities for the student to understand the theoretical basis upon which subject content is developed and organized. It also provides the student an opportunity to accumulate and to understand a vast body of facts which comprises one's selected discipline. The function of knowledge in the development of mature scholarship is emphasized in this segment of the prospective teacher's experiences also.

PROFESSIONAL EDUCATION

The professional education phase of the Teacher Education Program is designed to induct the prospective teacher into the profession of education. During this segment of the student's experience he develops definable competence in the following:

- 1. Understanding the school as a social system with structures, functions, and special goals.
- Understanding the learner (student) as a dynamic and unique personality capable of wide variation in behavioral adjustment.
- Understanding the functional nature of human learning, how to diagnose and assess it, and how it takes place in individual and group settings, especially in organized school environments.
- 4. Understanding what resources facilitate learning and how these resources may be effectively used in a learning-teaching environment.
- Understanding the processes at work between the school and the wider society which have influenced the learning-teaching situation, historically.
- 6. Understanding effective techniques and strategies for enhancing learning among students who have a wide range of needs, abilities, and interests.
- 7. Understanding the education profession as a medium through which continuous individual development of the teacher is paramount in order to maintain accountability to himself, to the students he will teach, to the profession proper, and to society in general.

TEACHER EDUCATION ADMISSION AND RETENTION STANDARDS, INCLUDING CERTIFICATION PROCEDURES

ADMISSION

The Teacher Education Council makes all policies governing the entire Teacher Education Program; therefore, admission, retention and exit procedures are reviewed by the Council. To be admitted to the Teacher Education Program, a student should inform the chairperson of the department in which he/she plans to major, of his/her interest during the sophomore year so that the chairperson can counsel the student accordingly. The student must then file an application form with the Director of Teacher Education after receiving approval from the departmental chairperson. At this time, the student's

complete profile will be examined by the Teacher Education Director. The student must have a minimum cumulative grade point average of 2.00 and a major field average of 2.00 before he/she can be admitted to the Program.

Prior to his/her fourth semester in residence each applicant must satisfy the

following requirements:

- 1. Successfully complete Mathematics 101 and 102 or 111 with a grade of "C" or better.
- Successfully complete English 100, 101, and Speech 250 with a grade of "C" or better in each course.
- 3. Take the necessary tests required by the Teacher Education Program.
- 4. Show evidence of good health. A statement from a physician is necessary. The health of a prospective teacher should not restrict his/her ability as a teacher. The details regarding what constitutes health not good enough for a teacher will be determined in consultation with the Student Health Director.
- 5. Demonstrate his/her ability to use the English language effectively.

RETENTION

To remain in the Teacher Education Program, the student must maintain an academic average of 2.00 in the area in which he/she seeks certification and in professional education. In addition, a student must repeat any required major field course or professional education course, except General Psychology or Introduction to Education, when he/she earns a grade of "D" or lower. The repetition will not be considered in the hours required for graduation but the hours and the grade for the repetition will be included in the determination of the overall grade point average.

Should a student's academic average fall below 2.00 in either the area he/she seeks certification or the area of professional education, he/she will be placed on probation or dropped from the Teacher Education Program, depending on the

level to which his/her academic marks fall.

Once a student has been dropped from the Teacher Education Program because of poor scholarship, he/she may reapply with the Director of Teacher Education providing his/her academic average has returned to 2.00 or above in the area he/she seeks certification and/or in the area of professional education.

READMISSION TO TEACHER EDUCATION PROGRAM

Once a student has been dropped from the Teacher Education Program for any reason, the following steps must be taken before a student will be readmitted to the Teacher Education Program:

- 1. The student must file a formal application for readmittance to the Teacher Education Program with the Director of Teacher Education.
- The Director of Teacher Education must bring the application of the student along with the student's complete profile before the Teacher Education Council for action

3. The Director of Teacher Education will formally notify, in writing, the student, Department Chairperson, Dean of the School involved and the Chief Officer of Academic Affairs of the action of the Teacher Education Council with reference to the student's application for readmission to the Teacher Education Program.

TRANSFERS TO THE TEACHER EDUCATION PROGRAM

Transfer policies refer to the student who starts his/her college program in an academic area (such as mathematics or chemistry) and decides to become a teacher late in his/her college career. The following requirements are necessary for admittance to the Teacher Education Program under these conditions:

- 1. The student must have satisfied the general education requirements.
- The student must have a 2.00 grade point average in his/her academic work and the general education program.
- The student must apply formally to be admitted to the Teacher Education Program. Application will be made to the Chairperson of the Department in which he/she plans to major.
- The student must meet the same criteria as are recommended for other students in suggested policies governing admission to the Teacher Education Program.
- The Chairperson of the Academic Department has the responsibility of enrolling the student in the Teacher Education Program after the Student has met all requirements.

CERTIFICATION

After completing the teacher education sequence of experiences, the student must apply for state certification by requesting a certification application form from the Office of the Director of Teacher Education. After completing the application and obtaining the appropriate signatures, the student must return the application form to the Office of the Director of Teacher Education, which will send the completed application form to the Office of Registration and Records. This office will attach a copy of the student's official transcript to the application form and forward it to the State Department of Public Instruction in Raleigh, North Carolina.

The student is required to take the National Teacher Examinations, both the Commons and the Teaching Area Examinations. The student must score at a level that is satisfactory to the State Board of Education. Modifications of certification will be made gradually as the new exit criteria and competency-based program approved by the State board of Education are phased into the preservice program.

IRREGULAR CERTIFICATION

Occasionally students will need to be certified under the provision of "irregular certification." This provision is made primarily for students who are classified in the following categories:

- One who completes an academic program of studies other than teacher education.
- 2. One who seeks initial certification in North Carolina from another state provided he/she does not qualify for certification under the "reciprocity" provision between the state of North Carolina and other selected states. A student does not need to be recommended by this institution for certification under the reciprocity provision; he/she makes direct contact with the North Carolina State Department of Public Instruction in Raleigh, relative to his/her certification problem.

Anyone seeking a recommendation for certification under the "irregular certification" provision must contact the Office of the Director of Teacher Education for appropriate directions.

DEPARTMENT OF ADMINISTRATION, SUPERVISION, AND POSTSECONDARY EDUCATION

Henry Cameron, Acting Chairperson

OBJECTIVES

The objectives of the Department of Administration, Supervision, and Postsecondary Education are to offer graduate level programs of preparation in educational administration and supervision and postsecondary education. The masters degree programs in administration and supervision are consistent with State-adopted competency-based guidelines and lead to North Carolina certification at the Administrator I and Curriculum-Instructional Specialist I levels. The Department also offers programs of certification for those students who already hold a masters degree in Education with certification in other professional areas. The graduate program is designed to prepare students for positions in administration, supervision, and teaching primarily at the community college and technical institute levels.

DEGRESS OFFERED

- *Master of Science in Education—Administration
- *Master of Science in Education—Supervision

GENERAL PROGRAM REQUIREMENTS

Requirements for admission to degree programs in the School of Education are as follows:

- 1. Baccalaureate degree from accredited undergraduate institution.
- 2. Class A certificate in area of concentration.
- 3. Satisfactory completion of all Graduate School requirements for admission to candidacy for a degree.

^{*} See the Bulletin of the Graduate School.

Under policies of the Graduate School, candidacy for a degree requires the following:

- 1. The Qualifying Essay
- 2. The Graduate Examination (Aptitude and Advanced Test in Education)
- 3. The Masters Comprehensive in Education and in either Administration or Supervision.
- 4. An overall grade point average of 3.0 for all graduate level courses.

DEPARTMENTAL REQUIREMENTS:

The major in administration must complete 30 semester hours of University courses for a graduate degree and at least 12 semester hours for certification only. An overall grade point average of 3.0 must be maintained for the degree or for certification.

A Curriculum Instructional Specialist major must complete from 30-33 semester hours for a graduate degree (30 for those completing work for the supervisor's program at the Early Childhood level and the Intermediate Education level). An overall grade point average of 3.0 must be maintained.

ACCREDITATION:

The graduate degree programs in administration and supervision are approved by the North Carolina State Department of Public Instruction.

CAREER OPPORTUNITES:

Graduate degree and certification programs qualify the student for the principalship and/or supervisory positions at the elementary and secondary school levels. The program in postsecondary education is designed to meet the need for administrative, supervisory, and teaching personnel at the community college and technical institute levels

CURRICULUM GUIDE:

Administration: 30 S.H. Required

This program is designed for students who are interested in qualifying for State Certification as Administrator I (the principal's certification). Completion of this program does not qualify one for the graduate teaching certificate.

Students pursuing certification, but not the masters degree are required to

complete at least 12 semester hours at this University.

Education 761, School Organization and Administration, is a prerequisite for all other professional courses in the specific areas of organization and administration, curriculum, instruction, and supervision (items 1b and 1c in the requirements outlined below).

1. Courses

- a. Foundations in Education—3 hours
 - Psy. 726—Educational Psychology

01

Ed. 701—Philosophy of Education

b. Organization and Administration—6 hours selected from:

Ed. 760—The Junior High School

Ed. 761—Organization and Administration of Schools

Ed. 762—The Principalship

c. Curriculum, Instruction and Supervision—6 hours selected from:

Ed. 720—Curriculum Development

Ed. 755—Supervision of Instruction

Ed. 756—Supervision of Student Teachers

d. Cognate Disciplines—6 hours selected from:

Economics

Political Science

Sociology

Anthropology

- e. Internship—Administrative Field Experience—3 hours
 - Ed. 769—Problems in Educational Administration and Supervision

2. Other Requirements

- a. GRE (Aptitude and Advanced Test in Education)
- b. Master's Comprehensive in Education and in Administration
- c. Overall grade point average of 3.0 for all graduate courses

Curriculum Instructional Specialist: 30-33 S.H. Required

For the Curriculum Instructional Specialist's I (Master's Degree) certificate, the State of North Carolina requires five years of teaching and/or supervisory or administrative experience within the past eight years. A student will not be recommended for the North Carolina Curriculum Instructional Specialist's certificate without the minimum five years of experience specified above.

A. Requirements for Unconditional Admission

1. Baccalaureate degree from accredited undergraduate institution.

2. Overall average of 2.6 in undergraduate studies.

- 3. Class A Certificate (or qualifications for such a certificate).
- 4. Failure to meet any of these criteria may cause rejection of the application or may require additional undergraduate work to satisfy the requirements.
- B. Courses in Education and Psychology—15 semester hours

1. Supervision—3 hours required

Education 755—Supervision of Instruction

Education 757—Problems in Supervision of the Elementary School

Education 758—Problems in High School Supervision

2. Curriculum—3 hours required

Education 720—Curriculum Development

Education 721—Curriculum in the Elementary School Education 722—Curriculum in the Secondary School

3. The Nature of Learning and the Learning Process—3 hours required

Psychology 635—Educational Psychology and Learning

Psychology 726—Educational Psychology

Psychology 727—Child Growth and Development

- 4. Organization and Administration—3 hours required Education 761—School Organization and Administration
- Educational Research—3 hours required Education 790—Seminar in Educational Problems
- C. Required Courses in Subject Matter to qualify for issuance of the graduate teacher's certificate—early childhood or intermediate, or secondary—12-18 semester hours.
- D. Electives—If 12 semester credit hours are used to satisfy C, 3 hours may be used as electives to meet the particular needs of the students.
- E. Other requirements
 - 1. Qualifying Examination
 - 2. Graduate Record Examination
 - 3. Master's Comprehensive Examination in Education
 - 4. Master's Comprehensive Examination in Supervision
 - 5. Overall grade point average of 3.0 for all courses

Total Number of Hours Required—30-33 (30 for those completing work for the supervisor's program at the Early Childhood Education level and the Intermediate Education level).

DEPARTMENT OF ADULT EDUCATION AND COMMUNITY SERVICES

B. W. Harris, Chairperson

OBJECTIVES:

Upon completion of the program, graduates will be expected to demonstrate these skills or competencies:

- 1. A broad understanding of and familiarity with the general field of adult education, i.e., concepts, theories, and teaching methods.
- Ability to construct a curriculum involving the learners and relevant resources.
- 3. Ability to conduct (teach) a meaningful teaching-learning experience.
- 4. An understanding of an ability to evaluate a teaching-learning experience.
- 5. A perception which indicates a holistic and interdisciplinary view regarding adult/continuing education.
- 6. Capability to make a thorough assessment of the needs of adults.
- 7. The ability to define and formulate behavioral learning objectives.

DEGREE OFFERED:

*Adult Education. - M.S.

GENERAL PROGRAM REQUIREMENTS:

The admission of students to the graduate degree program in the Department of Adult Education and Community Services is based upon the general admission requirements of the University.

The admission of students to the graduate degree program in the Department of Adult Education and Community Services is based upon the general admission requirements of the University.

DEPARTMENT REQUIREMENTS:

A minimum of 30 hours with thesis or 33 hours without thesis and at least a 3.0 average on a 4.0 scale. At least 50% of the courses counted toward the graduate degree must be of courses offered to graduate students only, i.e., courses numbered 700-799.

CAREER OPPORTUNITIES:

Students who earn the degree in Adult Education may look forward to careers in such endeavors as Agricultural Extension, Adult Basic Education, Community College Education, and Religious Education.

CURRICULUM FOR A MAJOR IN ADULT EDUCATION

Course	Description	Credit
A.E. 651	Introduction to Adult Education	3
A.E. 652	Methods in Adult Education	3
A.E. 653	Adult Development and Learning	3
A.E. 700	History & Philosophy of Adult/Cont. Edu.	3
A.E. 701	Organization, Administration and Supervision	3
	of Adult Education Programs	
A.E. 702	Practicum in Teaching Adults	3
A.E. 705	Thesis Research (Optional)	3
Edu. 710	Methods and Techniques of Research	3
Edu. 790	Seminar in Education Problems	3
Ag. Ed. 601	Adult Education in Occupational Education	3
Edu. 641	Teaching the Culturally Disadvantaged Learner	3
Edu. 602	(Media) Utilization of Educational Media	3
A.E. 654	Gerontology	3
SSS. 669	Small Groups	3
A.E. 703	Seminar on Contemporary Issues in Adult/	
	Continuing Education	1
A.E. 704	Independent Study	2
Edu. 690	The Community College & Post Secondary Edu.	3
A.E. 650	Special Problems in Adult Education	1-4

^{*}See the Graduate School Bulletin

DEPARTMENT OF EDUCATIONAL MEDIA

Tommie M. Young, Chairperson

OBJECTIVES:

- The development of a comprehensive integrated understanding of the role of media in relation to teaching and learning.
- 2. The development of appropriate attitudes and skills in human relations.
- The acquisition for knowledge and the development of skills in evaluation and selection of media.
- Including study and experience that provides competence in developing effective utilization of media by students and teachers.
- 5. The development of skills in the production of instructional materials.
- Basic competence related to organization and management of the media collection.
- The acquisition of knowledge and the development of skills related to the planning and management of the media program.

DEGREE OFFERED:

*Education (Educational Media Concentration) - M.S.

GENERAL PROGRAM REQUIREMENTS:

The admission of students to the graduate degree program in Educational Media is the same as the general admission requirements and policies of the University.

DEPARTMENTAL REQUIREMENTS:

The Educational Media program is interdisciplinary and requires a minimum of thirty (30) semester hours for the Masters Degree. A minimum of sixty percent (18 semester hours) must be in Media.

- 1. The program in Educational Media leads to North Carolina state certification as Media Coordinator in school settings.
- 2. The program in Educational Media also leads to North Carolina state certification as Associate Media Coordinator in school settings.

^{*}See the Graduate School Bulletin

A minimum of eighteen semester hours in Media is required with a teaching major.

The student must complete Ed. 604, 603, 602, and he/she must elect at least nine semester hours from the following: Ed. 600, 601, 606, and/or 607.

ACCREDITATION:

All Teacher Education Programs are approved by the North Carolina State Department of Public Instruction and accredited by the National Council for Accreditation of Teacher Education.

CAREER OPPORTUNITIES:

A degree in this field provides content and experiences that will qualify students preparing for careers in elementary schools, secondary schools, community colleges, technical institutes, and universities. Also, business, industry, government, military, and religious agencies.

Curriculum	Guide	
350-600	Classification of Media Collections	3(3-0)
350-601	Reference Materials	3(3-0)
350-602	Utilization of Educational Media	3(3-0)
350-603	Production of Instructional Materials	3(3-0)
350-604	Educational Media Administration	3(3-0)
350-605	Systems Approach and Curriculum	3(3-0)
350-606	Book Selection and Related Materials for Children	3(3-0)
350-607	Book Selection and Related Materials for Young People	3(3-0)
350-703	Educational Media Internship and Seminar	3(3-0)
350-704	Advanced Reference Bibliography	3(3-0)
350-705	Principles and Problems in Cataloging and Classification	3(3-0)

Cognate Courses

310-701	Philosophy of Education	3(3-0)
310-720	Curriculum Development	3(3-0)
310-790	Seminar in Educational Problems	3(3-0)
320-726	Educational Psychology	3(3-0)
311-S791	Thesis Research	3(3-0)

GRADUATE CURRICULUM COMPONENTS CORE COURSES

Advanced Undergraduate and Graduate Courses

Graduate Courses

LIBRARY

LIBRARY

350-600	Classification of Media	350-704	Advanced Reference
	Collections		Bibliography
350-60	Reference Materials	350-705	Principles and Problems in
350-606	Book Selection and Related	-	Cataloging and Classification
	Materials for Children		
350-607	Book Selection and Related		
	Materials for Young People		

MEDIA

MEDIA

Utilization of Educational		Programmed Instruction
Media	350-701	Media Retrieval Systems
Production of Instructional		Workshop in Educational
Materials		Media
Educational Media	350-703	Educational Media
Administration		Internship and Seminar
Systems Approach and	350-706	Media in Special Education
Curriculum		and Reading
	350-707	Professional Development of
		Media Personnel
	Media Production of Instructional Materials Educational Media Administration Systems Approach and	Media 350–701 Production of Instructional 350–702 Materials Educational Media 350–703 Administration Systems Approach and 350–706 Curriculum

INSTRUCTIONAL—TV

INSTRUCTIONAL-TV

350-608	Programming for	350-715	Advanced Production in
	Instructional Radio-TV		Instructional Radio-TV
350-609	Production for		
	Instructional Radio-TV		
350-610	Broadcasting for		
	Instructional Radio-TV		

Cognate courses are in the areas of Art, Business Administration, Reading, Special Education, Secondary Education and Curriculum, Administration, Supervision and PostSecondary Education, Speech and Theatre Arts, English, Industrial Education, Psychology, and Sociology.

DEPARTMENT OF EDUCATIONAL PSYCHOLOGY AND GUIDANCE

Wyatt D. Kirk, Chairperson

OBJECTIVE:

The objective of the Educational Psychology and Guidance is designed to prepare individuals for positions in Counseling and Guidance in both educational and non-educational settings to strengthen and improve the practitioner's professional skills in the area of human services. The program of studies includes counseling theories and procedures, theoretical and practical examination of human development and changes, techniques oriented courses, and a heavy emphasis on supervised practice. Graduates of the program are prepared to work in a variety of counseling settings, middle and secondary schools, junior college, and private and public agencies.

DEGREE OFFERED:

*Guidance or Counselor Education. - M.S.

GENERAL PROGRAM REQUIREMENTS:

*Following acceptance by the Graduate College, the Department of Educational Psychology and Guidance will accept students once they have completed nine hours of course work, at which time they will be evaluated, also, based upon their undergraduate point hour ratio, and the Department Faculty recommendation process.

DEPARTMENTAL REQUIREMENTS:

Counselor Education Majors - the major in Counselor Education Curriculum must complete 36 hours of graduate courses. The prerequisites for admission to the program are: 1) Introduction to Guidance and/or it's equivalency, and 2) a course in Educational Statistics or Psychological Measurement. A minimum grade of "B" must be achieved in the curriculum. This program is designed for the individual who seeks issuance of a School Counselor's Certificate and Master's degree.

Student Personnel Worker or Agency Counselor - the major in Student Personnel Worker or Agency Curriculum must complete 36 hours of graduate courses. The prerequisites for admission to the program are: 1) Introduction to Guidance, 2) Educational Statistics, or Psychological Measurement, and 3) Personnel Management. A minimum grade of "B" must be achieved in the curriculum. This program is for students who are interested in a noncertification program and/or interested in professional counseling career in an agency setting and the master's degree.

Manpower and/or Industrial Counseling - the major in Manpower and/or Industrial Counseling Curriculum must complete 36 hours of graduate courses.

^{*}See the Graduate School Bulletin

The prerequisites for admission to the program are: 1) Elementary Statistics or Psychological Measurement, 2) Introduction to Guidance, 3) Psychology 445, and 4) Business Administration 522. A minimum grade of "B" must be achieved in the curriculum. This program also is designed for the individual who seeks a non-certification degree and a master's degree. For students who are interested in a non-school setting, such as human services agencies, i.e. agency counseling, manpower jobs, and/or industry and government on the local, state and national level.

ACCREDITATION:

All education programs are accredited by the National Council for Accreditation of Teacher Education and approved by the North Carolina State Department of Public Instruction.

CAREER OPPORTUNITIES:

Traditionally, students receiving the Master's degree from Counseling and Guidance have found jobs in school settings (middle and secondary) junior colleges, public agencies (family services, youth services, welfare departments, and state agencies) and private agencies. Presently and additionally, career opportunities will include, opportunities in manpower positions, industry and government on the local, state and national level.

SEQUENTIAL (SUGGESTED) CURRICULUM ORDER FOR EDUCATIONAL PSYCHOLOGY AND GUIDANCE MAJOR

COUNSELOR EDUCATION MASTER OF SCIENCE

First Year

1st Semester	Credit	2nd Semester	Credit
Introduction to Guidance 600	3	Educational Statistics or Psychological Measurement	s 3
Technical Core Personality Development 623	3	Technical Core Organization Administration	3
reisonanty Development 623	9	Guidance Services 706	$\frac{3}{9}$

Second Year

3rd Semester	Credit	4th Semester	Credit
Internship in Guidance 714	3	Techniques of Individual Analysis 716	3
Elective Core	3	Elective Core	3
Introduction to Counseling		Principles and Dynamics of	
718	3	Group Counseling 720	3
	9		9

Third Year

*5th Semester

Educational and Occupational	
Information 717	3
Educational Psychology 726	3
Guidance Practicum 730	3
	9

^{*}Comprehensive Examination in the 5th Semester

SEQUENTIAL (SUGGESTED) CURRICULUM ORDER FOR EDUCATIONAL PSYCHOLOGY AND GUIDANCE MAJOR

STUDENT PERSONNEL WORKER OR AGENCY COUNSELOR MASTER OF SCIENCE

First Year

1st Semester	Crea	lit	2nd Semester	Credit
Introduction to Guidance 60 Educational Statistics or	00	3	Personnel Management 522	3
Psychological Measurement	its	3	Technical Core	3
Technical Core	_	3	Evaluation Methods 604	_3
		9		9

Second Year

3rd Semester	Credit	4th Semester	Credit
Personality Development 62 Technical Core Techniques of Individual Analysis 716	3 3 3 3 3 3 3 3 9 9 9	Educational and Occupational Information 717 Introduction to Counseling 718 Elective Core	3 3 -9

Third Year

*5th Semester	Credit
Elective Core Principles and Dynamics of	3
Group Counseling 720	3
Guidance Practicum 730	3
	9

SEQUENTIAL (SUGGESTED) CURRICULUM ORDER FOR EDUCATIONAL PSYCHOLOGY AND GUIDANCE MAJOR

MANPOWER AND/OR INDUSTRIAL COUNSELING

MASTER OF SCIENCE

First Year

1st Semester	Credit	2nd Semester	Credit
Elementary Statistics/ Psychological Measureme Introduction to Guidance 6 Technical Core		Psychology 445 Business Administration 522 Personality Development 623	
	Secon	d Year	
3rd Semester	Credit	4th Semester	Credit

3rd Semester	Credit	4th Semester	Credit
Evaluation Metho	ods 3	Techniques of Indivi	dual Analysis
			dual Allalysis
Technical Core	3	716	3
Educational and	Occupational	Introduction to Cour	nseling
Information 71	7 3	718	3
	9	Elective Core	3
	9		
			9

Third Year

*5th Semester

Principles and Dynamics of
Group Counseling 720

**Manpower Internship 725
Elective Core

DEPARTMENT OF ELEMENTARY EDUCATION AND READING

Marian L. Vick, Chairperson

OBJECTIVES:

The Early Childhood Education program is designed to develop professional competencies and understandings needed to teach in kindergarten through grade three.

At the graduate level, the department offers curriculum leading to the Master of Science degree in Early Childhood Education, Intermediate Education, Elementary Education (General) and Reading. The program aims to develop prospective teachers who will realize the importance of change, and the need for continued learning. All persons who guide the development of young children need an understanding of the child, his world, and the numerous forces that influence him, as well as the basic principles on which decisions regarding instruction and practice are based.

The graduate program in reading prepares teachers of reading for elementary and secondary schools.

DEGREES OFFERED:

Early Childhood Education - B.S.

- *Early Childhood Education M.S.
- *Elementary Education (General) M.S.
- *Intermediate Education M.S.
- *Reading Education M.S.

Reading Education - State Certification

^{*}Comprehensive Examination in the 5th Semester

^{*}See the Bulletin of the Graduate School

GENERAL PROGRAM REQUIREMENTS:

The admission of students to the undergraduate degree programs in the Department of Elementary Education and Reading is based upon the general admission requirements of the University.

To be admitted to the Teacher Education Program a student must satisfy the requirements as stated in the University Catalogue under Teacher Education Admittance and Retention Standards.

DEPARTMENTAL REQUIREMENTS:

Early Childhood Education - The major in early childhood education must complete 124 semester hours of University courses. Included in the 124 semester hours are 50 hours of professional education and subject matter specialization courses. A minimum grade of "C" must be achieved in these courses.

State Certification in Reading - Students desiring to obtain certification in reading at the undergraduate level must complete 18 specified semester hours in reading or reading related courses.

ACCREDITATION:

All Teacher Education Programs are accredited by the National Council for Accrediation of Teacher Education and approved by the North Carolina State Department of Public Instruction.

CAREER OPPORTUNITIES:

In addition to preparing teachers for K-3, a degree in this field also provides for career opportunities in allied fields such as health, social service, child/family relations, communication arts and curriculum area specialists.

SUGGESTED CURRICULUM GUIDE FOR A TEACHING MAJOR IN EARLY CHILDHOOD EDUCATION

Bachelor of Science

Freshman Year

1st Semester	Credit	2nd Semester Credit
English 100	3	English 101 3
History 204	3	History 205
Education 100	1	Mathematics 111 or 4
Chemistry 100, 110	4	Mathematics 101 and Math 102 6
Health Education 200	2	Political Science 200 or 210 3
Physical Educ. 101	1	Physical Education 102
Electives	1	Geography 210, 200, or 201 3
		
	15	17 or 19

Sophomore Year

1st Semester	Credit	2nd Semester	Credit
Psychology 320	3	Speech 250	2
Child Development 311	3	Zoology 461	4
Zoology 160 or Bio. Sc.	100 4	Anthropology 200	3
Humanities 200	3	Humanities 201	3
Education 300	2	Education 301	2
Electives	3	Electives	3
	18		17

Junior Year

1st Semester	Credit	2nd Semester	Credit
Education 451 Music 609 Education 660 Physical Education 462 English 626 or English 220 or English 430 Electives	2 3 3 2 3	Media Education 602 Art 600 Education 315 Education 436 Education 635 Electives	3 3 3 3 2 —
	16		

Senior Year

1st Semester	Credit	2nd Semester	Credit
Education 519	3	Education 556	3
Food and Nutrition 632	3	Education 557	3
Electives	_6	Education 560	_6
	12		12

DEPARTMENT OF HEALTH, PHYSICAL EDUCATION AND RECREATION

OBJECTIVES:

The objectives of the Department of Health, Physical Education and Recreation are:

- To provide instruction in a wide variety of physical education activities to meet the needs and interests of all students in the required general education program of the University.
- 2. To promote participation in wholesome extra-class activities through sponsoring and supervising such organizations as the Aquatics Club, Cheerleaders' Squad, Dance Group, Gymnastics Club, Women's Athletic Association, Intramural Leagues, and Officiating Club.
- To provide recreational outlets for students and members of the College community through conduct of informal recreational activities.
- 4. To enrich the total University program through cooperation with the programs of such units of the University as the music and dramatic groups, alumni association, agricultural homemaking groups, guidance and health service divisions.
- To provide necessary preparation for students planning careers as teachers
 of elementary, junior and senior high school health and physical education and a athletic coaches and recreational administrators.
- To provide courses in health, physical education which meet State and National Teacher Certification standards.
- 7. To provide courses in Recreation which meet guidelines of National Recreation and Park Administration.

DEGREES OFFERED:

Health and Physical Education - B.S. Recreation Administration - B.S. *Health and Physical Education - M.S.

GENERAL PROGRAM REQUIREMENTS

Each major is required to complete a minimum total of fourteen competencies of the following:

3—Team Sports

3-Individual and Dual Sports

2—Gymnastics

2—Dance

4—Swimming

Each major is also required to specialize in one of the following areas: Team Sports, Individual and Dual Sports (includes officiating), Gymnastics, Dance, Swimming or Athletic Training.

Any physical education major who seeks exemption from participating in an activity course should seek such an exemption during his or her freshman year.

Then and ONLY then should exemption be honored.

^{*}See the Graduate School Bulletin

During the Junior and Senior years before student teaching, the major will be assigned to an instructor and assist in the basic program. Freshmen Physical Education majors will be placed in PE 101 and PE 102.

Prior to admission to the teacher education block, students should have the approval of their advisor and/or the Department's Professional Preparation Committee. Care should be taken to see that students enrolling in the block have removed all deficiencies including "Fs" and "Ds" from their record.

All "Ds" and "Fs" received in 400 Level Major courses, and Professional

Education courses should be repeated.

Education 533 should be a prerequisite for Education 560.

CAREER OPPORTUNITIES:

The potential job market for Health and Physical Education majors over the next five years appears to be promising for the person who has equipped himself or herself with courses that will give strength in areas allied to Health and Physical Education. Jobs will be plentiful in areas allied to Health and Physical Education such as Therapeutic, Adapted and Corrective Physical Education, Health Statisticians, and Coaches in developing countries.

The potential for Recreation is growing rapidly. Areas such as Administrators in National Park Service, Commercial Recreators, Recreation

Therapist will be in great demand over the next five years.

CURRICULUM GUIDE: HEALTH AND PHYSICAL EDUCATION Freshman Year

Course and Number	Fall Semester Credit	Spring Semester Credit
English 100, 101	3	3
Mathematics 101, 102	3	3
History 100, 101	3	3
Biological Science 100	4	-
Physical Science 100	-	4
Physical Education 101, 102	1	1
Education 100 (1 hr. either semester)	1	1
Health Education 200	2	_
Health Education 220	-	2
Physical Education 240	2	
	19	17

Sophomore Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Education 300, 301	2	2
English 250	2	_
Humanities 200, 201	3	3
Foreign Language	3	3
Psychology 320	3	_
Zoology 160	_	4
Physical Education 229, 231	1	1
Physical Education 234, 235(W)	1	1
Physical Education 237, 238	1	1
Physical Education 246, 247	1	1
Physical Education 249, 251	1	1
Physical Education 261, 361	1	1
Air or Military Science		
(Optional)	2	2
•	21	20
	21	20

Junior Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Education 400	3	_
Psychology 436	_	3
Zoology 469, 560	3	3
Health Education 440	2	_
Physical Education 445	_	2
Physical Education 446	3	_
Health Education 442	_	3
Physical Education 448, 450	1	1
Physical Education 451, 452	1	1
Physical Education 453, 455	2	2
Physical Education 456, 458	2	2
Physical Education 460, 461	2	2
Physical Education 462	2	_
•	21	19
	41	19

Senior Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Health Education 560	2	_
Education 500	_	3
Physical Education 563	2	_
Education 560	_	6
Physical Education 566	3	_
Physical Education 567, 568	1	1
Physical Education 569	3	_
Education 533	3	
Education 637		3
	$\overline{14}$	13

CURRICULUM GUIDE FOR RECREATION

Freshman Year

1st Semester		2nd Semester	
English 100	3	Physical Education 102	1
Mathematics 101	3	Chemistry 100	3
History 100	3	Chemistry 110	1
Biological Science 100	4	English 101	3
Physical Education 101	1	Mathematics 102	3
Health Education 200	2	Physical Education 261	1
Education 100	1	History 101	3
		•	
	17		15

Sophomore Year

1st Semester		2nd Semester	
Humanities 200	3	Physical Education 247	1
Physical Education 460	2	Humanities 201	3
English 250	2	Sociology 100	3
Psychology 320	3	Health Education 220	2
Industrial Education 210	2	Physical Education 442	3
Economics 301	3	Physical Education 229	1
Physical Education 361	1	Art 401	3
Physical Education 231	1		
,			16
	17		

Junior Year

1st Semester		2nd Semester	
Recreation 402	2	Recreation 408	2
Political Science 210	3	Recreation 463	3
Recreation 464	2	Recreation 465	3
Music 119	2	Recreation 466	3
Physical Education 448	1	Physical Education 344	1
Recreation 561	3	Physical Education 458	2
Psychology 420	3		
, 6,	_		14
	16		

Recreation 112—Summer Field Experience I—6 S.H.

Senior Year

1st Semester		2nd Semester	
Recreation 509	2	Recreation 510	2
Education 602	3	Sociology 204	3
Physical Education 566	3	Business Adminis. 451 3	
Recreation 570	3	Electives	1
Business Adminis. 422	$\frac{3}{14}$		9
	14	Total Credit Hours 124	

DEPARTMENT OF SECONDARY EDUCATION AND CURRICULUM

Dorothy Prince Barnett, Chairperson

OBJECTIVES

The Department of Secondary Education and Curriculum provides the professional studies component for the preparation of teachers and other school personnel at the bachelor's degree and master's degree levels. The department cooperates with the various academic departments of the University for teacher education preparation. In addition, the department offers a concentration in Urban Education and a component in Career Education.

PROFESSIONAL STUDIES COMPONENT

The professional studies component of the Teacher Education Program is designed to provide for the development of those competencies essential to the professional role of a teacher or special service professional.

Undergraduate. Approximately eighteen percent of the undergraduate curriculum constitutes the professional studies component. Specific teacher competencies are developed through the provision of:

- 1. A study of the processes and theories of human growth development, learning and teaching with field experiences.
- A humanistic study of the problems, issues and trends in education within a historical, philosophical, sociological, economic and governmental framework.
- 3. Instruction and experiences in creating and using learning environments.
- 4. A study of the process and techniques for analyzing and evaluating the teaching learning environment.
- Experiences for the acquisition of knowledge, attitudes, and skills for positive human and social relationship.

Graduate. At the master's degree level, approximately 20 to 40 percent of the graduate program is required for professional studies. Candidates for degrees in elementary education (Early Childhood Education, Intermediate Education) must complete a minimum of 12 semester hours and candidates in secondary education must complete a minimum of six semester hours in professional studies. Specific professional studies courses are listed in the Graduate School Bulletin.

Urban Education Concentration

The Urban Education concentration is designed to prepare prospective teachers to meet the challenging needs of urban school systems. A minimum of 15 semester hours (which includes 6-9 hours already required in the professional studies component) is required. This concentration is added to the prospective teachers' major areas.

CAREER EDUCATION

Career education is conceptualized as a structured orientation and preparation in career development as an integral part of academic experiences. It should prepare every student, from kindergarten through graduate school, to determine and prepare for a rewarding occupation. Up to 12 semester hours of courses offered by the Department may be elected by students to enhance their preparation as teachers or as individuals.

CURRICULUM GUIDES

Professional Studies Component for Secondary and Special Areas

5

Sophomore Year

Fall Semester	Spring Semester
311 300	$\begin{array}{cccccccccccccccccccccccccccccccccccc$

Junior Year

311 400	3	311 436	 	. 3
				_
				3

Senior Year

311	500								 			3
311	525	or	ap	pr	op	ria	ite	•				
	me	tho	ods	C	ou	rse			 			3
311	560								 			6
310	637											3
											-	
											1	15

Urban Education Concentration

I. Nine semester hours of required courses

311 436		 3
311 628		 3
	or 310 637	
	01 310 037	

II. Six semester hours elected from the following courses:

311 302 3
310 315
311 402
311 413
Soc. 204
Psych. 420
History 420
Soc. 601
Poli. Sci. 643 3
Poli. Sci. 653 3
311 641 3
Health Ed. 651

Career Education Emphasis

Twelve sen	nester hours are offered as follows:	
311 605.	Concepts for Career Education	Credit 3(3-0)
311 606.	Curricular Integration of Career Education	Credit 3(3-0)
311 607.	Administration of Career Education Programs	Credit 3(3-0)
311 608.	Seminar in Career Education	Credit 3(3-0)

DEPARTMENT OF INDUSTRIAL EDUCATION

George C. Gail, Chairperson

GOALS AND OBJECTIVES:

Department Goals

- 1. To develop competencies necessary for persons to secure positions in Industrial-Technical Teaching at the secondary and post secondary school level or in related industrial, business, government careers requiring technical preparation.
- To provide inservice training opportunities for persons desiring to secure
 or renew North Carolina Certificates to teach or supervise Industrial Arts
 Education Programs or Trade and Industrial Education Programs; including Industrial Cooperative Training and Middle Grades Occupational
 Exploration.

Department Objectives

- To develop technological competencies in manufacturing, graphics, electronic communications, construction, power and transportation industries.
- To develop competencies in organizing and directing instructional programs, curriculum planning, and media utilization.
- 3. To develop competencies in planning, managing, and maintaining Industrial Education facilities.
- To develop proficiencies in using: technological problem-solving processes, occupational and consumer knowledge, safety skills and understandings, as Industrial Education course content.
- 5. To stimulate scholarly and scientific attitudes towards the problems and profession of industrial-technical teaching.

DEGREES OFFERED:

Industrial Arts Education - B.S. Vocational Industrial Education - B.S.

*Industrial Education - M.S.

Certification Options:

Industrial Arts Education (Teaching)

Trade and Industrial Education (Teaching and Administration)

^{*}See the Bulletin of the Graduate School.

GENERAL PROGRAMS REQUIREMENTS:

Initial admission of students to undergraduate degree programs is based on

general admission requirements of the University.

Admission, retention, and state certification of students in Industrial Teacher Education programs are based on policies described under the School of Education.

Community College and Technical Institute graduates and other transfer students may be admitted to undergraduate Industrial Education programs with advanced classification by submitting credentials to the University Admissions Office for individual assessment. Maximum transfer credit from Associate Degree programs is 62 semester hours or approximately Junior status.

General requirements for graduation are based on policies stated for the

University and for teacher candidates in the School of Education.

DEPARTMENTAL REQUIREMENTS:

Industrial Arts Education Major. Students must complete 127 semester hours, which includes 48 semester hours in general studies, 28 semester hours in Professional Education courses, and 51 semester hours in major courses. The grade point average in major courses must be 2.0 or better

Vocational Industrial Education Major. Students must complete 127 semester hours, which includes 48 semester hours in general studies, 28 semester hours in Professional Education courses, and 51 semester hours in major courses with a 2.0 average or better. Included in the 51 hour major sequence are thirty hours of technical studies concentrated in one of the following five optional cluster areas listed below:

OPTIONAL AREAS OF TECHNICAL MAJOR CONCENTRATION

Construction Industries Drafting and Graphic Industries Electrical Industries Manufacturing Industries Transportation Industries

Further Vocational Industrial Education program options are available for transfer students and persons who have prior work experience in technical areas. Such students will pursue individualized programs tailored to their specific needs, provided the following conditions are satisfied:

- 1. The area selected for a technical concentration in the major must be recognized by the North Carolina State Department of Public Instruction for T&I teacher certification.
- 2. The student must initially enter the program with advanced classification.
 - Persons holding an Associate Degree in the technical field selected for teacher certification may apply such transfer credits toward meeting technical course requirements.
 - Persons meeting University admission requirements desiring to substitute work/trade experience to meet technical course requirements in

the field selected for teacher certification, may receive college credit by satisfactory completion of a competency-based examination.

NOTE: Transfer students, and persons applying college credits earned through competency examinations who are enrolled in individualized programs of study, may apply a maximum of 22 semester hours of credit toward meeting technical course requirement in the Vocational Industrial Education major.

ACCREDITATION:

The Industrial Teacher Education programs are accredited by the National Council for Accreditation of Teacher Education. All programs are approved by the North Carolina State Department of Public Instruction.

CAREER OPPORTUNITIES:

Free employment and placement services are available through the Industrial

Education Department and University Placement Office.

Excellent employment opportunities exist for persons trained in Industrial Education. Public schools, post secondary schools and colleges in North Carolina and other states are in constant need of securing qualified teachers for industrial courses. Teaching positions continue to remain open for Industrial Arts specialists, shortages of personnel are reported in many states. Schools are experiencing difficulty in locating competent persons to fill vacancies.

Many career opportunities also exist for Industrial Education graduates in positions requiring an Industrial-Technical background; industrial-business enterprises, government agencies, rehabilitation and manual arts therapy centers, private schools, and recreational camps employ an estimated one-fourth of Industrial Education graduates as training directors, managers,

supervisors, engineering assistants, sales, and safety personnel.

INDUSTRIAL ARTS TEACHERS

Industrial Arts Teachers generally work with public school and college students assisting them to acquire fuller understandings and insights of various aspects of industry, its materials, production methods, products, operation, management, and personnel. Careers in Industrial Arts Teaching are open to men and women possessing technical competencies, creativity, ingenuity, organizational, and leadership abilities; and who enjoy working with youth and adults to help them acquire technical skills and knowledge.

The curriculum encompasses a study of many areas of technology such as Manufacturing, Construction, Electronics and Graphic Communication, Power and Transportation. Opportunities are provided for students to gain experience in: Drafting and Design; Wood, Metal, Plastic, and Craft Fabrication; Electricity-Electronics; Printing and Photography; Small Engines and Automotives. Students are actively involved in studying, planning, organizing, constructing, experimenting, testing, servicing and evaluating materials, processes, and products of industry. Students acquire knowledge of Industrial enterprise organizations and occupations, they develop competency in teaching methods and techniques, course planning and laboratory management.

VOCATIONAL INDUSTRIAL EDUCATION

The Vocational Industrial Education teachers works with high school or post secondary school students whose primary interest is training for a specific job in one industrial occupation. The training of a Vocational teacher must reflect a concentration of study and work experience in one of the Trade and Industrial occupations, therefore, he must select one industrial area for study from the technical options indicates in this curriculum.

Qualifications for success as a Vocational teacher requires a high degree of interest and aptitude in a single trade or occupational family, plus the ability and desire to work with and train people for jobs in industrial-technical occupations. North Carolina requires evidence of two or more years of work experience for certification of teachers in practically all areas of Trade and Industrial Education.

The general and professional education program of Vocational and Industrial Arts teachers are very similar, the major difference is in the are of technical concentration. A Vocational Industrial Education major studies and is certified to teach one Trade or Industrial occpation in depth; the Industrial Arts major studies and is certified to teach many area of technology.

INDUSTRIAL ARTS EDUCATION CURRICULUM

Freshman Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Industrial Education 260, 261	2	2
Industrial Education 210, 130	2	2
Mechanical Engineering 101, 102	3	3
English 100, 101	3	3
Mathematics 101, 102	3	3
Physical Science 100	4	_
Biological Science 100	_	4
	17	17

Sophomore Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Industrial Education 263, 463	3	2
Industrial Education 233, 234	3	3
Industrial Technology 210, 213	3	3
Industrial Technology 294, 231	3	3
Industrial Technology 470, 471	3	3
Speech 250	_	2
Physical Education	_	1
Health Ed 200	2	_
		_
	17	17

Junior Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Industrial Education 412	3	_
Industrial Education 462	2	_
Industrial Education 465, 566	2	3
Suggested Elective	_	2
Industrial Technology 293		3
Physical 320	3	_
Education 400	_	3
History 100, 101	3	3
Humanities 200, 201	3	3
	16	17

Senior Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Industrial Education 510	2	_
Industrial Education 662	3	_
Sociology 100	3	_
Economics 300	3	_
Education 436, 500	3	3
Education 560	_	6
Education 637	_	3
	$\overline{14}$	12

VOCATIONAL INDUSTRIAL EDUCATION CURRICULUM

Freshman Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Industrial Education 260, 261	2	2
*Mechanical Engineering 101,	3	_
English 100, 101	3	3
Mathematics 111, 112	4	4
Physical Science 100	4	-
Biological Science 100	-	4
Physical Education	1	_
Technical Option	_	3
	17	16

Sophomore Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Industrial Education 263, 463	3	2
*Industrial Technology 294	_	3
*Industrial Technology 470	3	_
Physics 211	4	
Speech 250		2
Physical Education 200	_	2
Technical Option	7	9
	17	18

Junior Year

Course and Number	Fall Semester Credit	Spring Semeste Credit
Industrial Education 462	. 2	_
Industrial Education 465, 566	2	3
Agricultural Education 401	_	2
Major Elective	_	3
Psychology 320	3	_
Education 400	_	3
History 100, 101	3	3
Humanities 200, 201	3	3
Technical Option	3	· -
· ·	16	17

Senior Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Industrial Education 662	3	_
Major Elective	2	_
Education 436, 500	3	3
Education 560	-	6
Education 637		3
Sociology 100	3	-
Economics 300	3	-
	$\overline{14}$	12

VOCATIONAL INDUSTRIAL EDUCATION OPTIONAL AREAS FOR TECHNICAL MAJOR

*(Select Technical Major Concentration in one of the following areas)

TRANSPORTATION INDUSTRIES:

IT IT IT IT	233 293 254 255 451 452	Industrial Arts Drafting3Power Technology3Automotive Fundamentals4Automotive Power Transmission4Automotive Instrumentation & System Analysis4Automotive Service Management4			
CO	NSTR	UCTION INDUSTRIES:			
IT IT IT IT	432 210 213 216 217 415	Architectural Drafting 3 Construction Technology 3 Wood Technology 3 Methods & Materials of Construction 4 Construction Estimating 4 Finishing Construction Projects 4			
DF	RAFTI	NG & GRAPHIC INDUSTRIES:			
IT IE IE IE IE	E 102 210 233 234 235 434 436	Engineering Graphics II 3 Construction Technology 3 Industrial Arts Drafting 3 Industrial Arts Drafting 3 Technical Drafting 3 Advanced Architectural Drafting 3 Machine Design Drafting or IE 536 Tool & Machine Design			
		Drafting			
ELECTRICAL INDUSTRIES:					
TI TI TI TI TI	235 210 231 234 235 430 431	Technical Drafting3Construction Technology3Electronics Circuits3Electronic Instrumentation3Semi-Conductor Electronics3Electric Computer Amplifiers3Video Electronics3			

^{*}Vocational Industrial Education students, enrolled in individualized programs, leading to T&I teacher certification in optional technical fields, may substitute major technical courses after consulting with and securing approval of advisor.

MANUFACTURING INDUSTRIES:

IE 233	Industrial Arts Drafting
	Construction Technology
	Metal Technology
IT 472	Manufacturing Processes Production I
IT 480	Mechanical Design & Manufacturing Problems
IT 481	Manufacturing Processes Metallurgy

DEPARTMENT OF INDUSTRIAL TECHNOLOGY

Arlington Chisman, Chairperson

OBJECTIVES:

Students in the Department of Industrial Technology will develop an understanding of industry, methods of production, the influence of industrial products and services upon the pattern of modern social and economic life; develop an appreciation of good design and workmanship in their application to construction and to manufactured products; experience a challenging program of instructional activities designed to meet the requirements of employment in modern technology, including science and business management; and acquire a high degree of competence in their chosen technical elective.

DEGREES OFFERED:

Industrial Technology, Automotive - B.S. Industrial Technology, Construction - B.S. Industrial Technology, Electronics - B.S. Industrial Technology, Manufacturing - B.S.

GENERAL PROGRAM REQUIREMENTS:

The admission of students to the undergraduate degree program in the Department of Industrial Technology is based upon the general admission requirements of the University.

DEPARTMENTAL REQUIREMENTS:

Technology majors must complete 124 semester hours of University courses. A minimum of 16 semester hours must be completed in one of the technical options.

Graduates of technical institutes and community colleges who have earned the Associate Degree in the following technology areas may be admitted to the Industrial Technology program as juniors: Civil Engineering, Electrical Engineering, Electronics Engineering, Manufacturing Engineering, Mechanical Engineering, and Mechanical Drafting and Design. (Graduates of other technologies are invited to submit their credits for consideration.) Specific course

requirements for these students will have to be made on an individual basis after their previously earned credits have been assessed. The typical student in this program will be required to take at least 62 additional semester hours. In effect, such students will be engaged in a 2+2 year program culminating in earning the B.S. degree.

ACCREDITATION:

The Department of Industrial Technology is accredited by The National Association of Industrial Technology.

CAREER OPPORTUNITIES:

Graduates of our Industrial Technology program have been among the most sought after alumni of our University in recent years and are employed in industrial and business positions in supervision, management, engineering and technical sales.

INDUSTRIAL TECHNOLOGY CURRICULUM

Freshman Year

Course and Number	Fall Semester Credit	Spring Semester Credit
English 100, 101	3	3
Mathematics 111, 112	4	4
*Physical Science 100	4	_
Biological Science 100	_	4
M.E. 101, 102 Eng. Graphics.	3	3
I.T. 190 Intro. to Ind. Tech.	2	-
I.T. 191 Ind. Tech. Proc	_	2
	16	16

Sophomore Year

Course and Number	Fall Semester Credit	Spring Semester Credit
History 100, 101	3	3
I.T. 293 Power Technology	3	. –
I.T. 294 Electronics	_	3
**Drafting Electives	3	_
Technical Physics 211, 212	4	4
Humanities 200, 201	3	3
Electives	-	3
	16	16

Junior Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Personal Hygiene 200	_	2
Accounting 221	3	_
***B.A. 220, Bus.		
Environment	3	_
B.A. 422 Intro. to Management	-	3
Math 240 Digital Computer	_	3
Econ. 305 Elem. Statistics	3	_
Speech Fundamentals 250	_	2
I.T. 491 Strength of Materials .	3	_
****Technical Options	4	4
Electives	_	3
	16	17

Senior Year

Course and Number	Fall Semester Credit	Spring Semester Credit
***B.A. 481 Production Mgt./		
or I.T. 592		
Project Mgt.	3	_
***B.A. 522 Personnel Mgt	_	3
I.T. 492 Communicating		
Tech. Spec	2	_
I.T. 493 Ind. Plant Planning		
& Mgt	2	_
Psychology 320	3	_
I.T. 593 Ind. Safety	_	3
****Technical Options	4	4
Electives	_	3
	1.6	13
	14	13

TOTAL: 124 Semester Hours

^{*}Chemistry 101 may be substituted for Physical Science.

^{**}Drafting Electives are determined by and listed with Technical Options.

NOTE: Military or Air Science may be used as electives.

^{***}The Business Courses listed in the junior and senior year are recommended.

Other Business courses may be accepted on approval of Advisor.

^{****}Technical Electives must be from option block.

COURSES FROM WHICH TECHNICAL OPTIONS MAY BE CHOSEN (Minimum 16 semester credit hours from the options listed below)

Automotive Technology	*Drafting Elective I.E. 436, 536	Semester Credit Hours
254	Automotive Fundamentals	4
255	Automotive Power Transmissions	4
451	Automotive Instrumentation &	
	System Analysis	4
**452	Automotive Servicing Management	4
*497 & 498	Cooperative Training in Industry	4-4
*599	Independent Study	3

Construction Technology	*Drafting Elective I.E. 234, 432, 434	Semester Credit Hours
215	Introductory Processes for Construction	
	Projects	4
216	Methods and Material Construction	4
217	Construction Estimating	4
412	Mechanical Systems for Buildings	2
**413	Principle of Construction Management	3
414	Methods in Plane Surveying	3
415	Finishing Construction Projects	4
*497 & 498	Cooperative Training in Industry	4-4
*599	Independent Study	3

Electronics Technology	*Drafting Elective I.E. 235, 432, 434, 436, 536	Semester Credit Hours
231	Electronic Circuits	3
234	Electronic Instrumentation	3
235	Semi-Conductor Electronics	3
430	Electronic Computer Amplifiers	3
431	Video Electronics	3
432	Electronic Communication	3
433	Industrial Electronic Controls Systems	3
**434	Management in the Electronic Industry	3
*497 & 498	Cooperative Training in Industry	4-4
599	Independent Study	3

Manufacturing Technology	*Drafting Elective I.E. 235, 432, 434, 436, 536	Semester Credit Hours
472	Manufacturing Processes Production I	4
473	Manufacturing Processes Production II	
	Advanced	4
480	Mechanical Design and Manufacturing	
	Problems	4
481	Manufacturing Processes-Metallurgy	4
497 & 498	Cooperative Training in Industry	4-4
570	Environmental Controls, A.C. and	
	Heating Systems	4
**576	Manufacturing Production and	
	Operations Management	4
596	Electro-Mechanical Controls Advanced	4
599	Independent Study	3

^{*}Electives are selected in consultation with departmental advisor

TYPICAL 2—YEAR CURRICULUM IN INDUSTRIAL TECHNOLOGY FOR ASSOCIATE IN SCIENCE GRADUATES

NOTE: First two years of academic credits earned at Technical Institutes or Community Colleges.

Junior Year

Course and Number	Fall Semester Credit	Spring Semester Credit
*Physical Science 100, Bio.		
Science 100	4	4
Soc. Science 100, 101 Western		
Civi. I & II	3	3
**Technical Breadth Electives	3	. –
Humanities 200, 201	3	3
***B.A. 220	3	_
Math 240 Digital Computer	_	3
Econ. 305 Elementary		
Statistics	_	3
	16	16

^{**}Synthesizing experiences for seniors are required

Senior Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Accounting 221	3	_
***B.A. 422 Intro. to Management .	3	_
***B.A. 481 Production Mgt/I.T.		
592 Project Mgt	_	3
I.T. 492 Comm. Tech. Spec	-	2
I.T. 493 Ind. Plant Planning &		
Mgt	2	_
I.T. 495 Dimensional		
Metrology	_	3
***B.A. 522 Personnel Mgt	-	3
I.T. 593 Ind. Safety	3	_
****I.T. Technical Option	4	_
Electives	2	2
	17	13
	TOTAL: 6	2 Semester Hours

^{*}Chemistry 101 may be substituted for Physical Science

INDUSTRIAL TECHNOLOGY MAJOR WITH THE MANPOWER CONCENTRATION

The Department of Industrial Technology offers a manpower concentration which provides an understanding of manpower planning, manpower program evaluation and manpower administration. In this concentration students gain expertise in coping with problems of employment and additional skills for careers in state, city and county government, federal agencies, private industry as well as community manpower agencies.

Students interested in the manpower concentration should pursue the following module by successfully completing the entire core requirement and

selecting a minimum of two electives.

MANPOWER CONCENTRATION MODULE

Required Courses (Complete these)

Econ.	602	Manpower	Problems	& Prospects
Econ.	603	Manpower	Planning	

^{**}Technical Breadth Elective is determined in consultation with I.T. Departmental Advisor

^{***}The Business courses listed are recommended. Other business courses may be acceptable on approval of Advisor.

^{****}To be selected from technical option in consultation with Advisor.

Psych.

B.A.	569	Human Resources Management Sociology of Work & Occupations
Sociol.	302	Economics 305, Psychology 322, Statistics
Psych.	445	Industrial Psychology
Ind. Tech.	497	Cooperative Training in Industry I
Ind. Tech.	498	Cooperative Training in Industry II
		Electives (Select two)
Econ.	604	Evaluation Methods
Psych.	544	Psychological Testing
Psych.	444	Applied Psychology
Sociol.	600	Seminar on Social Planning
Psych.	600	Introduction to Guidance

The Manpower Module courses may be substituted for selected courses listed in the Industrial Technology Curriculum. Credit earned in the manpower concentration are accepted toward the 124 minimum semester hours required for the Industrial Technology degree.

Behavior Modification

Disability and Employment

Manpower courses may be substituted for the following Industrial Technology courses:

1. Technical Electives (8 hours)

645

309

- 2. Business & Management
- 3. Electives

DEPARTMENT OF SAFETY AND DRIVER EDUCATION

Isaac Barnett, Chairperson

OBJECTIVES:

The objectives of the Safety and Driver Education program are to prepare qualified individuals as safety and driver education teachers, safety supervisors for school districts, state and federal safety personnel, research personnel and safety personnel in industry. Both the baccalaureate and master's curricula are offered.

The programs are responsive to regulatory efforts to the state and federal government in preparing safety specialists to cope with the hazards produced in part by the advancements in technology.

DEGREES OFFERED:

Safety and Driver Education - B.S.

^{*}Safety and Driver Education - M.S.

^{*}See the Bulletin of the Graduate School

GENERAL PROGRAM REQUIREMENTS

The admission of students to the undergraduate degree programs in the Department of Safety and Driver Education is based upon the general admission requirements of the University.

DEPARTMENTAL REQUIREMENTS:

Safety and Driver Education - The major in Safety and Driver Education must complete 124 semester hours of University courses. Included in the 124 semester hours are thirty-three hours of Safety and Driver Education courses at the 200 level or above. A minimum grade of "C" must be achieved in these courses.

ACCREDITATION:

All Teacher Education Programs are accredited by the National Council for Accreditation of Teacher Education and approved by the North Carolina State Department of Public Instruction.

CAREER OPPORTUNITIES:

Many career opportunities are available for those competent in the Safety and Driver Education field. Some of the many career opportunities are in: teaching, safety management, municipal agencies, state agencies, federal agencies, industry, and research.

CURRICULUM FOR A MAJOR IN SAFETY AND DRIVER EDUCATION

Bachelor of Science

Freshman Year

1st Semester	Credit	2nd Semester	Credit
History 100	3	History 101	3
Math 111	4	Math 112	4
Bio. Sci. 100	4	Education 100	1
Phy. Ed. Elective	1	Phy. Ed. Elective	1
English 100	3	English 101	3
Elective	2	Elective	_3
	17		15

Sophomore Year

	Copiloni	orc rear	
1st Semester	Credit	2nd Semester	Credit
Safety & Driver Educ. 254	3	Safety & Driver Educ. 353	3
Phy. Sci. 100	4	Physics 201	3
Education 300	2	Education 301	2
Psychology 320	3	Speech 250	2
Humanities 200	3	Humanities 201	3
Elective	2	Elective	2
	17		17

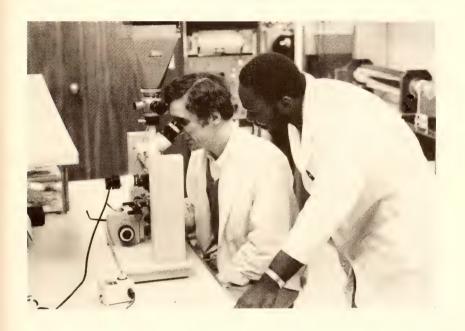
Junior Year

1st Semester	Cr.	Hrs.	2nd Semester Cr	. Hrs.
Safety & Driver Educ.	356	3	Safety & Driver Educ. 454	3
Safety & Driver Educ.	455	3	Safety & Driver Educ. 456	3
Safety & Driver Educ.	557	3	Safety & Driver Educ. 558	3
Economics 301		3	Education 436	3
Sociology 100		3	Industrial Technology 231	3
Education 400		3	Elective	2
		18		17

Senior Year

1st Semester	Cr.	Hrs.	2nd Semester	Cr.	Hrs.
Safety & Driver Educ.	655	3	Safety & Driver Educ.	561	3
Safety & Driver Educ.	657	3	Education 500		3
Education Media 602		3	Education 560		6
Elective		3			12
		12			12
		12			

SCHOOL OF ENGINEERING





School of Engineering

Section 10

Suresh Chandra, Dean William Craft, Assistant Dean

The School of Engineering grants bachelor of science degrees in architectural, electrical, industrial and mechanical engineering. The School also grants bachelor of science degrees in engineering mathematics and engineering physics in cooperation with the Departments of Mathematics and Physics. The programs in architectural, electrical and mechanical engineering are accredited by the Accreditation Board for Engineering and Technology, Inc. (ABET).

The School offers the Master of Science degree in Engineering, Electrical

Engineering and Industrial Engineering.

The curricula offerings include a five-year program in architectural engineering and four year programs in each of the other undergraduate engineering disciplines.

The programs of study are aimed toward preparing a student for engineering practice in all phases of his chosen field. The specific objectives of the School of Engineering are:

- 1. To prepare the student for an active career in all facets of professional engineering.
- 2. To provide a comprehensive background in all phases of the engineering design process, namely: conception, planning, synthesis, analysis, design, and management.
- To provide a basic knowledge of the mathematical and natural sciences upon which the practice of professional engineering depends.
- To develop the judgment the engineer requires to utilize effectively, and economically, the materials and forces of nature for the benefit of mankind.
- 5. To encourage the student to develop an appreciation for the process of continuing education.
- To develop the intellectual, professional, and social characteristics of the student in such a manner as to enable him to become a responsible leader in his community.

ADMISSION TO THE SCHOOL OF ENGINEERING

The admission requirements are generally the same as those required for entrance as a freshman student. However, two units of algebra, one unit of plane geometry, and one-half unit of trigonometry are required for students who elect to pursue engineering curricula.

COOPERATIVE EDUCATION PROGRAM

A five-year cooperative program, in which students may earn a major portion of their educational expenses through a work study arrangement with industry, is available to students with satisfactory scholastic records.

After satisfactory completion of at least two semesters in the freshman year, students in engineering, mathematics or physics may alternate semesters in industry with semesters at the University until their senior year. They then remain at the university until graduation. This arrangement enables the student to receive two years of work experience and at the same time earn educational expenses.

DEPARTMENT OF ARCHITECTURAL ENGINEERING

William A. Streat, Jr., Chairperson

OBJECTIVES:

It is the aim of the program in architectural engineering to encourage and develop students, who exhibit creative ability and who exhibit the ability to grasp and use scientific principles, for professional careers in the art and science of building. Strong emphasis is placed on training in the building sciences and on training in engineering as it applies to the design and construction of buildings. Training provided through exposure and involvement with research projects and investigations directed by the architectural engineering faculty is encouraged.

The architectural engineering program provides considerable training in general education which is devoted to study of social and physical sciences, art, english, mathematics and the humanities. Introductory courses in architectural engineering and a large percentage of the required general education courses are scheduled in the freshman and sophomore years. This training, during the first and second years, provides background for the study of basic engineering science and the study of more professional courses which are scheduled later in the program. Instruction within the department of architectural engineering is organized under four divisions.

- 1. Graphics, Architectural Design and Architectural History
- 2. Environmental Control, Electrical and Mechanical Equipment of Buildings
- 3. Professional Practice, Management, Materials & Methods of Construction
- 4. Structures

Each of these divisions has specific course requirements that are aimed toward the development of the architectural engineering student, so that he will be able to take his place in society as a professional in the field of engineering.

The five year program in architectural engineering leads to the bachelor of science degree and is fully accredited by the Accreditation Board for Engineering and Technology, Inc. (ABET).

DEGREES OFFERED:

Architectural Engineering-B.S.

GENERAL PROGRAM REQUIREMENTS:

The admission requirements are generally the same as those required for entrance as a freshman student. However, two units of algebra, one unit of plane geometry, and one-half unit of trigonometry are required for students who elect to pursue architectural engineering.

DEPARTMENTAL REQUIREMENTS:

The major in architectural engineering must complete 160 semester hours of University courses. Included in the 160 semester hours are 9 semester hours of architectural engineering courses selected from one of three optional blocks—Structures, Architectural Design and Planning, or Environmental Systems. A minimum cumulative grade point average of 2.00 for all architectural engineering courses completed, and a minimum cumulative grade point average of 2.00 for all courses taken at the University are required for graduation.

ACCREDITATION:

The five year program in architectural engineering is accredited by the Accreditation Board for Engineering and Technology, Inc. (ABET).

CAREER OPPORTUNITIES:

Completion of the architectural engineering program provides training for a career in the profession of engineering as related to the planning, design and construction of buildings. Training in architectural engineering prepares graduates to pursue a goal of professional practice or business. Graduates are employed in offices of professional engineers engaged in building systems design which include the design of structural, mechanical and electrical systems for buildings. Graduates are employed in the offices of professional architects engaged in planning and in the architectural design of buildings. Architectural engineering graduates have an opportunity for a career with construction firms and building materials manufacturers where there exist various positions that utilize architectural engineering training.

CURRICULUM GUIDE FOR A MAJOR IN ARCHITECTURAL ENGINEERING

Freshman				
Fall		Spring		
Course	No. Cr		No. Cr.	
Mathematics		Architectural Engineering	221 3	
English		3 English	101 3	
History	100 3 111 2	History	101 3 309 3	
Architectural Engineering Chemistry		2 Geology 3 Mathematics	309 3 117 5	
Chemistry	-	1	11/)	
Chemistry	17	-	— 17	
			17	
	Sop	homore		
Fall		Spring		
Course	No. Cr	. Course	No. Cr.	
Architectural Engineering	222	3 Architectural Engineering	223 3	
Art		2 Humanities	200 3	
Mathematics	300 4		335 3	
Mechanical Engineering	210 2	2 Physics	222 3	
Physics		3 Mathematics	350 3	
Physics	231 2	2 Physics	232 2	
	16	5	17	
	Lowe	er Junior		
Fall	2011	Spring		
Course	No. Cr	1 0	No. Cr.	
30%/30	140. 07		110. 071	
Architectural Engineering		3 Architectural Engineering	332 3	
Architectural Engineering		2 Architectural Engineering	337 2	
Architectural Engineering		3 Architectural Engineering	334 3	
Electrical Engineering		Architectural Engineering	335 3	
Mechanical Engineering		Mechanical Engineering	300 2	
Mechanical Engineering	346	1 Mechanical Engineering	337 <u>3</u>	
	16	5	16	
	Uppe	er Junior		
Fall		Spring		
Course	No. Cr.	. Course	No. Cr.	
Architectural Engineering	454 3		455 2	
Architectural Engineering	456	3 Architectural Engineering	457 3	
Architectural Engineering	451 3		458 3	
Mechanical Engineering	441		301 3	
Elective	3	- F	3	
		Mechanical Engineering	416 _3	
	15	5	17	

Senior

Fall			Spring		
Course	No.	Cr.	Course	No.	Cr.
Architectural Engineering Architectural Engineering Architectural Engineering Elective Optional Block	561 563 565		Architectural Engineering Architectural Engineering Industrial Engineering Elective Optional Block	562 564 460	3 3 2 3 3
		15	•		14

OPTIONAL BLOCK STRUCTURES

Architectural Engineering	459	2
Architectural Engineering	569	3
Engineering	652	4
Engineering	644	3

ARCHITECTURAL DESIGN AND PLANNING

Architectural	Engineering	452	4
Architectural	Engineering	566	4
Architectural	Engineering	453	3
Architectural	Engineering	567	5

ENVIRONMENTAL SYSTEMS

Architectural	Engineering	568	3
Architectural	Engineering	448	3
Architectural	Engineering	449	3

The completion of at least nine semester hours from one of the optional block concentrations is required.

FRESHMAN	34
	54
SOPHOMORE	33
LOWER JUNIOR	32
UPPER JUNIOR	32
SENIOR	29
TOTAL	160

DEPARTMENT OF ELECTRICAL ENGINEERING

Winser E. Alexander, Chairberson

OBJECTIVES:

The objectives of the Department of Electrical Engineering are to provide the opportunity for its students to acquire the educational background necessary to pursue professional careers in electrical engineering or to continue their education toward advanced degrees. The primary purpose of the department is to teach technical arts and sciences related to the field of electrical and computer engineering.

DEGREES OFFERED:

Electrical Engineering—B.S. *Electrical Engineering—M.S.

GENERAL PROGRAM REQUIREMENTS:

The admission of students to the undergraduate degree program in the Department of Electrical Engineering is based upon the general admission requirements of the University.

DEPARTMENT REQUIREMENTS:

Electrical Engineering Major—The major in electrical engineering must complete 127 semester hours for the Bachelor of Science degree. Included in the 127 semester hours are forty hours of electrical engineering, twelve hours of mechanical engineering, and six hours of advanced engineering courses. A minimum grade of "C" must be achieved in all electrical engineering courses.

ACCREDITATION:

The Electrical Engineering Program is accredited by the Accreditation Board for Engineering and Technology, Inc. (ABET).

CAREER OPPORTUNITIES:

A degree in this field prepares a student for careers in Computer Engineering, Engineering Design, Electronics, Communications, Power Engineering and Signal Processing

^{*} See the Graduate School Bulletin

SUGGESTED CURRICULUM GUIDE FOR A MAJOR IN ELECTRICAL ENGINEERING

Bachelor of Science

Freshman

212-100 223-101 223-111 225-116	Fall Semester N Fresh Comp I Gen Chem I Gen Chem Lab I Engr Math I Intf EE I	3 3 1 5 4 16	212-101 225-117 227-221 227-331	bring Semester No. Fresh Comp II Engr Math II Gen Phys I Gen Phys I Lab Intf EE II	<i>Cr.</i> 3 5 3 2 4 17
		Sophoi	more		
227–222 227–232 225–300	E Ckt Anal I Gen Phys II Gen Phys II Lab Ord Dif Equ His Wes Civ	4 3 2 4 3 16	440–335 420–300 420–320	Mech I, Statics E Ckt Anal & Synt Electronics I Intro Appl Math Elective	$ \begin{array}{r} 3 \\ 4 \\ 4 \\ \hline 2 \\ \hline 17 \end{array} $
		Juni	or		
420–325 420-400	Electronics II Prin EM Waves Sig Anal & Proc Thermo I Elective	4 3 3 3 3 16	420–427 227–406	EM Rad & M Th Intro Log Design Mod Phys I Mech II Dyna Elective	3 3 3 3 15
		Seni	or		
420–430 **	El Mach I Electives	$\frac{4}{10}$	440–416 **	Fluid Mech Electives	$\frac{3}{13}$ $\frac{13}{16}$

DEPARTMENT OF INDUSTRIAL ENGINEERING

Henry Kroeze, Acting Chairperson

OBJECTIVES:

The main objective of the Industrial Engineering Department is to provide quality education programs leading to the Bachelors and Masters degrees. Our

curriculum is designed to educate professional engineers needed to fill technical and/or managerial positions in manufacturing and service industries, govern-

ment and private practice.

The Department of Industrial Engineering offers a program of study which emphasizes a solid general engineering and humanistic background. To this background major courses in Industrial Engineering are added which integrate the use of the computer to aid in the solution of problems. Another major factor in Industrial Engineering is to blend the human element into the total system. The curriculum focuses more attention on the man-machine interface than other engineering fields. Additionally, principles of business, economics and accounting are blended into the curriculum to provide a base for our graduates to progress into management.

The American Institute of Industrial Engineers defines the field as follows: Industrial engineering is concerned with the design, improvement, and installation of integrated systems of men, materials and equipment. It draws upon specialized knowledge and skill in the mathematical, physical, and social sciences together with the principles and methods of engineering analysis and design to specify, predict, and evaluate the results to be obtained from such

systems.

DEGREES OFFERED:

Industrial Engineering—B.S.I.E. *Industrial Engineering—M.S.I.E.

*Engineering—Industrial Engineering Concentration—MSE

GENERAL PROGRAM REQUIREMENTS:

The admission of students to the undergraduate degree program in the Department of Industrial Engineering is based on the general admission requirements of the University.

DEPARTMENTAL REQUIREMENTS:

A total of 128 semester hours of credit are required for graduation. There are 106 hours of specific required courses. Additionally, there are 9 hours of humanities electives, 3 hours of engineering science electives, 7 hours of technical electives and 3 hours of free electives. Course substitutions for the 106 hours of specific required courses must be approved by the students' advisor and department chairman.

CAREER OPPORTUNITIES:

Industrial Engineering is one of the four major engineering demand fields (i.e., electrical, mechanical, civil and industrial engineering) in the United States. Of all engineering fields, industrial engineering represents the engineering field with the greatest unmet need. At present, the number of industrial engineering graduates produced each year represents one-third of the demand

^{*} See the Graduate School Bulletin.

for industrial engineering graduates nationally. Starting salaries for industrial engineers are equal to those of other leading starting salary careers of electrical, mechanical and civil engineering. Because of the education industrial engineers receive and the type of experience they gain in industry, they very often switch to management careers five to ten years following graduation. Industrial Engineering and the MBA (i.e., Masters of Business Administration) are generally considered to be the two best preparations for an individual interested in pursuing a management career in a technical company. Because of the volume of manufacturing and service organizations in North Carolina, there is considerable demand for Industrial Engineers in North Carolina, and surrounding states as well.

A recent issue of the "Occupational Outlook Handbook" gave Industrial Engineering the highest rating for hiring prospects.

CURRICULUM GUIDE:

PROGRAM IN INDUSTRIAL ENGINEERING

Freshman

Course No. Engl-100	Fall Semester Cr.	<i>Hr.</i> 3	Course No. Engl-101	1 0	r. Hr. 3
Math—116 IE—101 IE—102 ME—103 Humanities	Eng Math I Intf to IE Lec Intf to IE Lab Graphics	5 2 1 2 3 16	Math-117 IE-150 ME-226 IE-210	Eng Math II Intr to IE Mfg Procs	$\frac{5}{3}$ $\frac{2}{16}$
		Sophom	ore		
Phys-221 Phys-231 Math-300 IE-320 ME-260	Eng Stat	3 2 4 3 3 15	Phys-222 Phys-232 IE-410 ME-335 Chem-101 Chem-111	Mthds Eng Statics Gen Chem I	3 3 3
		Junio	r		
IE-460 ME-336 Math-624	Elec Eng I Eng Econ Stnth of Matls Meth of Appl Sta Qual Cont	4 2 3 3 3 15	IE-480 EE-442 ME-441 ME-337 Acct-221	Elec Eng II Thermo I Dynamics	$\frac{3}{4}$ $\frac{3}{3}$ $\frac{3}{16}$

Senior					
IE-530	Prod Cont	4	IE-550	Fac Plan	3
Econ-300	Micro Econ	3	Econ-301	Macro Econ	3
	Tech Elec	3		Tech Elec	4
	Humanities	3		Humanities	3
	Eng Sc Elec	_3		Free Electives	_3
		16			16

DEPARTMENT OF MECHANICAL ENGINEERING

Tony C. Min, Chairperson

OBJECTIVES:

The objectives of the Mechanical Engineering Department are to produce graduates with a comprehensive background in mathematics, the physical and social sciences and the humanities in addition to a thorough grounding in engineering fundamentals and mechanical engineering specialties. These graduates should be competent in the engineering techniques related to the planning, design, analysis and synthesis required in the implementation of mechanical engineering projects.

DEGREES OFFERED:

Mechanical Engineering-B.S.

GENERAL PROGRAM REQUIREMENTS:

The entrance requirements for the Mechanical Engineering Program are the same as those for the School of Engineering, viz. in addition to the general requirements for admission by the University, two units of algebra, one unit of plane geometry and one-half unit of trigonometry are required.

DEPARTMENTAL REQUIREMENTS

The Mechanical Engineering Major must complete 130 credit hours following the approved departmental curriculum. At the beginning of the senior year the student must specify one of the two major option blocks, i.e., energy conversion or machine design, from which he must choose at least 6 of the 9 required technical elective credit hours.

ACCREDITATION:

The Mechanical Engineering Program is fully accredited by the Accreditation Board for Engineering and Technology, Inc. (ABET).

CAREER OPPORTUNITIES:

The Mechanical Engineering Program prepares students for engineering practice in industry, government or private practice or for continued education at the graduate level. By far the largest proportion of graduates take jobs with private industry. Such jobs can be classified under the following general headings: Research and Development, Design, Testing, Production, Technical Marketing, Technical Management. Career opportunities are possibly the most diverse of any engineering discipline.

PROGRAM IN MECHANICAL ENGINEERING

Freshman Year

	Fall Semester	Spring Semester
Course and Number	Credit	Credit
English 100, 101	3	3
History 100, 101	3	3
*Mathematics 116, 117	5	5
Mechanical Engineering 100, 226	3	3
Mechanical Engineering 103	2	-
Chemistry 101	-	3
Chemistry 111	-	1
·		
	16	18

^{*} Students entering with a deficiency in mathematics or who score low on the Mathematics Placement Examination must begin with Pre-Engineering Mathematics and the above mathematics sequence would be shifted one semester.

Sophomore Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Industrial Engineering 210 & ME 336	2	3
Mechanical Engineering 260, 337	3	3
Mechanical Engineering 335, 346	3	1
Physics 221, 222	3	3
Physics 231, 232	2	2
Mathematics 300	-	4
Humanities 200	3	-
	16	16

Junior Year

Course and Number	Fall Semester Credit	Spring Semster Credit
Mechanical Engineering 416, 440	3	3
Electrical Engineering 441, 442	4	4
Mechanical Engineering 441, 442	3	4
Mechanical Engineering 426, 474	1	3
Mechanical Engineering 562	-	4
Mathematics 500	4	-
Electives	2	<u>-</u>
	17	18

Senior Year

Course and Number	Fall Semester Credit	Spring Semester Credit
Economics 301	3	_
Mechanical Engineering 564	3	-
Mechanical Engineering 560, 574	3	3
Electives	6	9
Industrial Engineering 460	-	2
	15	14

Total Credit Hours: 130

Elective Hours. . . . 2 Free Electives

575 Solar Energy

- 9 Technical Electives, 6 of which must be from Option Block
- 6 Humanities—social science

Energy Conversion Option		Machine Design Option		
540	Dynamics of Mechanical Engineering Systems	540	Dynamics of Mechanical Engineering Systems	
561	Environmental Control	565	Machine Design II	
	Energy Conversion		Mechanical Vibrations	
568	Gas Dynamics	567	Experimental Stress Analysis	
570	Internal Combustion Engines		•	
571	Turbomachinery			

SCHOOL OF NURSING





The School of Nursing

Section 11

Marietta C. Raines, Acting Dean

The School of Nursing offers a program leading to the Bachelor of Science Degree in Nursing. The school is organized into lower and upper divisions. The first two academic years or lower division of the program encompass the core requirements of the university and the foundation courses for the major. The upper division or last two academic years is largely devoted to Nursing courses.

PHILOSOPHY AND OBJECTIVES

The faculty in Nursing subscribes to the beliefs and assumptions related to the system of concepts that describe, explain, and predict man's behavior. Man is a unique, biopsycho-socio-spiritual being with certain basic needs. He is affected, influenced, and changed by his heredity, environment, and experiences. There are variations in intensity and resources which hamper him from time to time in meeting his basic needs resulting in a state of disequilibrium. The nursing program is based on the faculty's belief concerning man and his intrinsic worth. Our participation through nursing education is in the preparation of the student to assist the unique individual in making his maximum contribution to society.

The faculty believes that education is a continuous process which provides opportunities for personal growth which helps the learner gain keener insight of self and the nature of man and prepares the learner for humanistic and

professional endeavors in a dynamic society.

Nursing education is the systematic preparation of an individual to fulfill the roles, functions, and responsibilities of the professional nurse. In addition, nursing education provides learning experiences which aid the learner in utilizing the problem solving method in meeting present and future nursing needs of society.

We believe that the person prepared to render professional nursing care utilizes knowledge, understanding, and skills derived from the biological, psychological, socio-cultural, and humanities areas of study in assessing and making judgments while providing nursing care. Professional nursing with its allies in health affairs, has responsibility for teaching the individual, family, and community; health maintenance, health promotion, illness prevention and health restoration.

Nursing is a dynamic profession, sensitive, accountable, and responsive to the changing health needs of society, thus professional functions will be altered, extended and developed within the various nursing roles: practitioner, teacher, leader, collaborator, learner, advocate, and change agent. We believe the methodology of nursing is the nursing process and entails independent, interdependent and dependent actions.

The faculty agrees with WHO's definition of health which states "Health is that state of complete physical, mental, and emotional well being and not necessarily the absence of disease or infirmity."

We believe man has an innate capacity for health, and nursing care should be accessible to man regardless of cultural diversification. Nursing has a prime responsibility to facilitate the individual, family, and societal attainment and maintenance of this goal.

At the completion of this program the graduate will be able to:

- Recognize the basic needs of man and the relationship of these needs to his behavior in the prevention of illness, promotion of wellness and in the movement toward self-actualization.
- Utilize concepts, principles and theories from natural and behavioral sciences, and nursing to analyze and solve health care problems of individuals, families and communities.
- 3. Demonstrate the ability to think critically and make decisions utilizing the nursing process as the methodology for the practice of nursing.
- 4. Recognize contributions of nursing research and apply findings to nursing practice.
- 5. Accept responsibility and accountability for professional nursing actions.
- Practice the roles of learner, practitioner, teacher, collaborator, leader, and patient advocate in the delivery of professional nursing service.
- Apply principles of teaching and learning in the promotion of health care.
- 8. Act as a change agent within the health care system to promote health within a culturally diverse society.
- Recognize the need for continuous study and assume responsibility for personal and professional development.

Accredition and Memberships:

The program offered by the School of Nursing is accredited by the National League for Nursing. The School of Nursing is an agency member of the National League for Nursing in the NLN Council of Baccalaureate and Higher Degree Programs, the American Association of Colleges of Nursing and the Southern Regional Education Board Council on Collegiate Education for Nursing.

General Program Requirements

The area of general program requirements include general information, admission, progression and graduation requirements.

General Information:

Nursing Majors are required to purchase uniforms for the Spring Semester of the Sophomore Year. The Estimated Cost is (\$115.00) one hundred and fifteen dollars. Beginning in the Sophomore Year, students are required to secure liability insurance through the School of Nursing.

Learning experiences are provided in a variety of health care agencies. Students will provide their own transportation in Greensboro and Guilford County.

Students are expected to attend all nursing classes with absences permitted only in unusual circumstances. Make up time lost during clinical nursing practice experiences will be left to the discretion of the faculty.

A minimum of 126 credit hours is required for graduation with a Bachelor of Science in Nursing. A minimum of 36 credit hours must be earned at North

Carolina Agricultural and Technical State University.

Graduates of the Nursing Program are eligible for admission to the North Carolina State Licensure Examination.

Admission Criteria for Freshmen - Students:

- A. The Applicant must be a graduate of an accredited high school having completed sixteen units of credit, and
 - 1. have a combined Scholastic Aptitude Test Score of 750 or above, or
 - 2. achieved a cumulative average of "B" or better.
- B. Admission into the nursing major will depend upon the completion of the following courses or equivalent courses with a grade of "C" or a 2.0 in each course:

Chemistry 104, 105, 114, 115	8 hrs.
Mathematics 101, 102	. 6 hrs.
General Zoology 160	4 hrs.
Ideas and Their Expressions 100, 101	6 hrs.

C. Students seeking transfer into the nursing major must provide evidence of having completed the above courses maintaining a 2.0 or better, and a cumulative average of at least 2.0.

Progression Requirements:

- A. Courses in the nursing major must be completed in the sequence of the designed curriculum.
- B. All science courses required in the nursing major must be completed with achievement of a 2.0 grade point for each.
- C. Each nursing course must be completed with a grade point of 2.6.
- D. A second failure in the nursing major will prevent continuing in the nursing program for any enrolled nursing student.

Graduation Requirements:

- A. The completion of all courses with a cumulative grade point average of not less than 2.6.
- B. Successful passing of a comprehensive examination in nursing.

Career Opportunities:

The Bachelor of Science Degree in Nursing when accompanied by nursing licensure prepares the graduate for first level employment positions in a variety of nursing settings. Some possible opportunities include, institutional (hospitals), public health agencies, clinics, military services and private practice.

Suggested Curriculum Guide For a Nursing Major

Freshman Year

1st Semester	Credi	it 2nd Semester	Credit				
Freshman Mathematics 101 Ideas & Their Expressions 100 General Chemistry 104 General Chemistry Lab. 114 General Zoology 160 Nursing Orientation 100	3 3 3 1 4 1	Freshman Mathematics 102 Ideas & Their Expressions 101 General Chemistry 105 General Chemistry Lab. 115 General Microbiology 121 Physical Education 102	3 3 3 1 4				
Physical Education 101 or	1						
Personal Hygiene 200	2 16-1		 15				
Sc	ophon	nore Year					
Western Civilization 100 Humanities 200 General Psychology 320 Human Anatomy & Physiology 461 Nursing Competency Lab. 201 Perspectives of the Nursing Profession 200	3 3 3 4 1 1 15	Western Civilization 101 Humanities 201 Principles of Sociology 100 Nutrition & Dietetics 337 Nursing Competency Lab. 211 Nursing Process (Introduction) 2	$ \begin{array}{c} 3 \\ 3 \\ 3 \\ 3 \end{array} $ 210 3 $-\frac{17}{17}$				
Junior Year							
Health Needs of the Nuclear Family 300 Nursing Competency Lab. 301 Nursing Practice 302 Speech Fundamentals 250 Electives (Behavioral Sciences)	5 1 4 2 3 15	Pathophysical Needs of Man 310 Nursing Competency Lab. 311 Nursing Practice 312 Abnormal Psychology 434 Electives (Behavioral Sciences)	5 1 4 3 3 -				
Senior Year							
Pathophysical Needs of Man 400 Nursing Practice 401 Electives	6 6 3 —	Psychosocial Needs of Families 4 Nursing Practice 411 Nursing Seminar 563 Electives	610 6 6 2 3 17				

DEPARTMENTS OF MILITARY SCIENCE AND AEROSPACE STUDIES





Departments of Military Science and Aerospace Studies

Section 12

The Reserve Officers' Training Corps (ROTC) at A&T State University consists of those students enrolled for training in the Department of Military Science or in the Department of Aerospace Studies. These Departments are integral academic and administrative subdivisions of the institution. The Senior Army Officer and Senior Air Force Officer assigned to the University are designated as Professor of Military Science (PMS) and Professor of Aerospace Studies (PAS), respectively. These senior officers are responsible to the Department of Defense and the Institutional Coordinator of Military Training for conducting the training and academic programs. Army officers who are assigned to the University as ROTC Instructors are designated Assistant Professors of Military Science; Air Force officers, as Assistant Professors of Aerospace Studies. Noncommissioned officers of the Army are assigned as Assistant Instructors and administrative personnel. Noncommissioned officers of the Air Force are assigned as Specialists, Technicians, and Supervisors in the area of Administration, Education, Personnel and Supply.

DEPARTMENT OF MILITARY SCIENCE

Lt. Colonel Charles H. Jackson Professor of Military Science

The general purpose of the Army Reserve Officers Training Corps (ROTC) program at this institution is to procure and produce junior officers, who through education, attitude and inherent qualities are suitable for continued development as officers in the United States Army.

OBJECTIVES

The objectives of the ROTC program are:

- To attract, motivate, and prepare selected students with potential to serve as commissioned officers in the Regular Army or US Army Reserve.
- To provide an understanding of the fundamental concepts and principles of military art and science.
- To develop the ability to evaluate situations, to make decisions, to understand people, and practice those attributes considered to be essential in a leader.
- 4. To develop a basic understanding of associated professional knowledge, a strong sense of personal integrity, honor and individual responsibility.

5. To develop an appreciation of the requirements for national security.

PROGRAMS OF INSTRUCTION

Programs of instruction for the Army ROTC include a four year program and a two year program. The four year program consists of a two year basic course, a two year advanced course and the Advanced ROTC Summer Camp. The two year program includes a Basic ROTC Summer Camp, a two year advanced course and the Advanced ROTC Summer Camp.

BASIC COURSE: The basic course is elective for all physically fit male and female students who are not less than 17 years of age and is normally taken during the freshman and sophomore years. The purpose of this course is to introduce the student to basic military subjects: Military History; familiarization with basic weapons, equipment, and techniques; military organization and functions; and the techniques of leadership and command. Those who successfully complete this course are selected on a best qualified basis for the Advanced Course which leads to an Officer's commission.

ADVANCED COURSE: The advanced course is designed to produce officers for the active Army as well as the Reserve components. Admission to the Advanced Course is on a best qualified basis. Successful completion of this course and completion of academic degree requirements qualifies the student for a commission as a Second Lieutenant in one of the following branches of the Army: Adjutant General's Corps, Armor, Infantry, Military Intelligence, Field Artillery, Air Defense Artillery, Chemical Corps, Military Police Corps, Ordnance Corps, Quartermaster Corps, Signal Corps, Medical Service Corps, Corps of Engineers, Finance Corps, Transportation Corps, and Army Nurse Corps. Special requirements and/or additional training is required for commissioning in the Medical Corps, Army Medical Specialists, and the Veterinarian Corps.

TWO YEAR PROGRAM: This program is designed for Junior College students or rising juniors at four year institutions who have had no previous ROTC Training. A basic six-week summer training period after the sophomore year takes the place of the basic course required for students in the traditional four year program. When a student with two years of college has successfully completed the basic summer training, he is eligible for enrollment in the Advanced Course during his junior and senior years. The Advanced Course, which leads to an Officer's commission is the same for students in either the four year program or the two year program.

Requirements for enrollment in the Basic Course

- 1. Be a citizen of the United States
- 2. Be not less than 17 years of age
- 3. Meet medical fitness requirements prescribed by the Department of the Army
- 4. Be a regularly enrolled full-time student of the University
- 5. Be of good moral character
- 6. Execute the standard loyalty oath for ROTC students

Requirements for enrollment in the Advanced Course

- 1. Be a citizen of the United States
- 2. Be selected by the PMS and have the approval of institutional authorities
- 3. Enlist in a Reserve Component. Parent's or guardian's consent is necessary if under age 18.
- 4. Must sign a contract with the Army. Parent's or guardian's consent is necessary if the applicant is under 18 years of age.
- Agree to accept a commission if offered and serve for the period prescribed
- 6. Successfully complete the first two years of a four year course, or complete a summer camp of at least six weeks duration; or receive credit in lieu of as a result of previous military service.
- 7. Must satisfactorily comply with loyalty requirements
- 8. Meet other requirements as prescribed by the Department of the Army

TRANSFER CREDIT

A student may be allowed transfer credit for military training pursued at the service academies or other institutions with ROTC units. Record of a student's prior military training will be obtained from the institution concerned. A student who has served at least six months of active Army service, or at least one year active duty service in any branch of the Armed Forces may receive credit for part of the basic course, or credit for the entire basic course, respectively.

OBLIGATIONS AFTER COMMISSION

The student who receives a Reserve Commission may be required to serve on active duty for three (3) years and therafter three (3) years in a reserve status, or if selected for Reserve Forces Duty (RFD), 3-6 months active duty and the remainder of his obligation with a local Reserve or National Guard unit. The recipient of a Regular Army Commission serves a minimum of three (3) years on active duty and three (3) years in a reserve status.

The Officer who elects to pursue a civilian career after his active service, has many opportunities to continue military education while completing his obligation in a reserve status. Service schools are open to the reservist at all stages of his career. Selected individuals may continue their civilian schooling (i.e., med, law, graduate) at the expense of the Armed Force while in active duty service. Those attending school under this arrangement incur a further active service obligation.

UNIFORMS AND EQUIPMENT

Uniforms, textbooks, and equipment are provided the student at government expense. A uniform deposit of ten (\$10.00) dollars is required of all students at time of enrollment. The deposit is refunded when complete

uniforms and textbooks are returned. The student is responsible for the care, safeguarding and cleaning of property issued to him. He is financially responsible for the loss, excessive wear, breakage due to carelessness, or unauthorized use of clothing and equipment.

All ROTC property must be returned to the Military Property Custodian at the end of the school year or when the student withdraws from the program.

Scholarships/Subsistence Pay

One, two and three-year scholarships are available. Contact Military Science Department for details. All advanced course students and scholarship students are paid \$100 per month subsistence pay.

ENROLLMENT IN ROTC

To remain within the ROTC program, the student must be enrolled as a full time student here at the University. Should difficulties be encountered and the student falls below a 12 hour semester load, the military advisor must be notified immediately. Those students not carrying the minimum load of 12 hours, may be dropped from the program.

WOMEN IN ROTC

Army ROTC is available to female students on the same basis as it is to male students. Specific information for females enrolling in ROTC is provided as follows:

A. Branch Selection:

It is Army policy to assign each graduating female to a branch after considering her personal preference, academic major, physical qualifications, ROTC training and demonstrated abilities, so far as possible. Women may be assigned to Air Defense Artillery, Engineer Corps or Field Artillery as well as noncombat arms branches. Women are allowed to participate in Airborne, Ranger, and Air Assault Training and may be selected by their branch for Aviation Training.

B. Enrollment Age:

Female enrollees must have attained 17 years of age. If under 18, they must obtain parental consent unless their state of legal domicile has granted women legal majority at an earlier age. Women must be under 28 years of age to be commissioned through the ROTC program.

C. Scholarships

Same as the information listed under financial aid section.

GRADUATE STUDIES

An ROTC graduate who receives a Reserve or Regular Army commission may delay his active military service to pursue a full time course of instruction leading to an advanced degree. The top five (5) per cent of all non-scholarship Distinguished Military Graduates selected for Regular Army may elect, if qualified, to attend Graduate School for a Masters degree in the field of study for which the Army has a valid requirement. Officers in this category will be on active duty with full pay and allowances.

ROTC graduates are assigned positions of responsibility which take full advantage of their college education and leadership training. Officers, especially those who have background in scientific and technical fields, may qualify for graduate study at government expense after they enter active service.

CO-CURRICULAR ACTIVITIES

Co-curricular activities sponsored by the Department of Military Science are considered a part of the ROTC program. Such activities improve a cader's leadership ability. Active participation will be considered in arriving at the final grade and will increase opportunity for promotion in the Cadet Corps. Cadets are urged to participate in one of the following ROTC activities. Membership is selective and voluntary on the part of the cadet.

National Society of the Pershing Rifles

Founded in 1884, by the General of the Army, John J. Pershing. The society is a military social fraternity committed to the highest ideals of excellence in leadership and manhood.

Trick Drill Team

All Basic Course students are eligible to compete for participation on the ROTC Drill Team. A unit whose specialties are trick and fancy drills. The Drill Team conducts demonstrations both on and off the campus throughout the school year.

Precision Drill Team

All Basic Course students are eligible to compete for participation on the ROTC Precision Drill Team. A drill unit whose performance is limited to regulation drill movements. This unit receives additional training and performs as the honor guard for special ceremonies both on and off campus.

Bushmasters (Ranger Unit)

The Bushmasters (Counterinsurgency Unit) is an elite group of Army ROTC cadets organized to provide training in counterinsurgency operations. This unit consists of *all* voluntary cadets.

Orienteering Team

Orienteering is one of the most natural sports. Besides being a sport in its own right, it is the key which opens the door to other outdoor activities such as hiking, ski touring, hunting, fishing trips, wilderness exploration, etc. It also leads to conservation and appreciation of nature. As a competitive sport, it demands an unusual and wonderful combination of the use of mind and body. A participant need not necessarily be involved completely physically. He/she may enjoy and succeed fairly well in the sport, without being a top-rate athlete. The team is new; once organized, competitive matches will be set up with other ROTC units. This activity will be open to all cadets.

North Carolina A&T State University Rifle Team

An organization to teach members proper firing techniques for record firing with the .22 caliber rifle. This team represents the university in competition with other ROTC units throughout the Southeast and several trips are planned each year to nearby schools. It operates under the auspices of the ROTC Department and is a member of the Mideastern Athletic Conference. This activity is open to all cadets.

Advanced Leadership Company

Participation in the Advanced Leadership is limited to MS III cadets. The purpose of this unit's training is to provide the cadet with challenging leadership experiences that will prepare him/her mentally and physically for Advanced Camp and future active duty assignments.

Basic Leadership Company

Participation in the Basic Leadership is limited to MS I and MS II cadets. The purpose of this unit is to provide initial leadership experiences to cadets new to the ROTC program. Activities commonly associated with this unit are Dismounted Drill, First Aid, Marksmanship, Adventure Training and the Basic NCO Academy.

Run For Your Life

This program is based upon accepted aerobic practice which research indicates to be a sound method of physical conditioning. The program is carefully structured to provide progression, regularity, and recognition for achievement. It is a simple and effective method of improving the cardiovascular system, it strengthens certain skeletal muscles and aids in maintaining general health. This program will be opened to all medically qualified cadets.

The Association of the US Army (AUSA)

The Association of the US Army (AUSA) is a non-profit, educational organization whose members, civilian and military, firmly believe that a thoroughly professional Army, supported by the American people, is essential to our national defense. The organization supports every man or woman who wears the Army green—Active, Reserve or National Guard.

Scabbard and Blade

The National Society of Scabbard and Blade was founded 1904. The primary purpose of Scabbard and Blade is to raise the standard of military education in American colleges and universities; to unite in closer relationship their military departments; to encourage the essential qualities of good and efficient officers; and disseminate knowledge of military education to the students and people of the country—acquaint the people with our national defense needs.

DEPARTMENT OF AEROSPACE STUDIES

Lt Colonel Monroe J. Fuller Professor of Aerospace Studies

The United States Air Force maintains a permanent Air Force Reserve Officers Training Corps at this institution for the purpose of conducting leadership training, military training, and flight training. The specific objective is to conduct a modern academic program keyed to the development of the Professional Officer. This program is offered in two divisions. The lower division for Freshmen and Sophomores is termed the General Military Course. The upper division, established as the Professional Officer Course, is designed to continue the training of Juniors and Seniors so as to provide a complete four-year officer preparatory program. The entire Aerospace Studies curriculum is designed to commission quality young men and women who are not only educated in the academics of their university, but who have a competency in certain military skills, and a strong motivation for active duty and an Air Force Career.

PROGRAM OF INSTRUCTION

GENERAL MILITARY COURSE (GMC). This course is open to freshmen and sophomores and is designed to provide the student with a basic foundation in the history and development of air power and the organization and mission of the U.S. Air Force. Those students who successfully complete this course are eligible to attend Field Training and to enroll in the Professional Officer Course (discussed below).

FIELD TRAINING, AFROTC Field Training is offered during the summer months at selected Air Force bases throughout the United States. Students in the four-year program participate in four weeks of Field training during the summer, usually between their sophomore and junior year. The major areas of study in the four-week Field Training program include junior officer training, aircraft and aircrew orientation, career orientation, survival training, base functions and Air Force environment, and physical training.

Students applying for entry into the two-year program must successfully complete six weeks of Field Training prior to enrollment in AFROTC. Application for the two year program must be made during the Fall (or early Spring) Semester of the sophomore year. The major areas of study included in the six-week Field Training program are essentially the same as those conducted at four-week Field Training and in the General Military Course, including

Leadership Laboratory.

PROFÉSSIONAL OFFICER COURSE (POC). Entry into the Professional Officer Course is competitive in nature. Applicants must attain a certain minimum score on the Weighted POC Selection System (WPSS). WPSS is a selection system that uses a number of weighted factors. Included in the factors are cumulative grade point average, scholastic aptitude test scores, Air Force Officer Qualifying Test Scores, grades in Air Force ROTC courses, and academic major. Applicants must also pass an Air Force medical examination. The first year of the POC is a study of management and leadership. The final year deals with the formulation and implementation of American Defense Policy and the Military Law System.

LEADERSHIP LABORATORY. Leadership Laboratory is taken an average of one hour per week throughout the student's four years of enrollment in AFROTC. Two-year program students participate while in the Professional Officer Course. Instruction is conducted within the framework of an organized cadet corps with a progression of experiences designed to develop each student's leadership potential and management skills. Leadership Laboratory involves a study of Air Force customs and courtesies; drill and ceremonies; career opportunities in the Air Force; and the life and work of an Air Force Junior Officer. Students develop their leadership potential and management skills, in a practical supervised laboratory, which typically includes field trips to Air Force installations throughout the U.S.

UNIFORMS AND EQUIPMENT

All regularly enrolled cadets of the Air Force ROTC are furnished cost-free, Air Force ROTC uniforms, equipment, and textbooks. A deposit of ten dollars (\$10.00) is required of all cadets at the time of registration as security for clothing and equipment. This fee will be refunded upon return of all items issued. Each cadet is responsible for the maintenance and security of property. All property issued, must be returned at the end of the normal school year or upon withdrawal from school.

TRANSFER CREDIT

Transfer credit is permitted cadets entering the Air Force ROTC, from another advanced ROTC program (Air Force, Army or Navy), at any college, university or academy.

FINANCIAL AID

A subsistence fee of \$100.00 per month is paid advanced cadets (juniors and seniors) during the entire normal academic year while a member of the Air Force ROTC.

Scholarships may be granted for periods of two, two and one half, three, three and one half, and four years. Details on scholarships will be published by the Department of the Air Force and by the Department of Aerospace Studies, N.C. A&T State University. All students on scholarship receive \$100.00 per month tax-free allowance and the Air Force pays tuition, laboratory fees and book costs.

STRUCTURE OF THE CADET GROUP

The Air Force ROTC Cadet Group, commanded by a Cadet Lieutenant Colonel, consists of three squadrons (nine flights). Within the structure of this group are such special functions as: The Drill Team, the elite Arnold Air Society and Angel Flight.

SPECIAL HONORS

Outstanding performance in the Air Force ROTC Training Program, on the part of certain selected cadets can bestow on them the honor of Distinguished Graduate. Other honors are the Commandant's Award and the Vice-Commandant's Award.

CADET WELFARE FUND

All AFROTC Cadets are members of the Cadet Welfare Fund. A membership fee of \$5.00 is charged payable at initial registration each year. These fees are used to defray expenses for various cadet social activities.

AIR FORCE ROTC OFFICERS CLUB

The Cadet Officers Club provides advanced cadets with an opportunity to demonstrate organizational leadership ability and to promote social and cultural activities. Each advanced (POC) cadet is requested to become a member of the club and is obligated to pay club dues. The amount of the dues will be determined by club members each school year.



THE GRADUATE SCHOOL





The Graduate School

Section 13

Albert W. Spruill, Dean

Graduate education at North Carolina Agricultural and Technical State University was authorized by the North Carolina State Legislature in 1939. The authorization provided for graduate training in agriculture, applied science and allied areas of study. An extension of the graduate program, approved by the General Assembly of North Carolina in 1957, provided for enlargement of the program to include teacher education as well as such other programs of a professional or occupational nature as might be approved by the State Board of Higher Education.

OBJECTIVES OF THE GRADUATE SCHOOL

The Graduate School of North Carolina Agricultural & Technical State University offers advanced study for qualifed individuals who wish to improve their competence for careers in professions related to agriculture, applied science, education, science research, technology, the humanities and the social sciences. Such study of information and techniques is provided through courses of study leading to the Master of Science degree and through institutes, workshops, and individual courses designed for those who are not candidates for a higher degree but who desire advanced work in certain fields of study. Second, the Graduate School provides the foundation of knowledge and of techniques required for those who wish to continue their education in doctoral programs at other institutions. Third, the Graduate School assumes the responsibility of stimulating and encouraging scholarly research among students and faculty members.

It is expected that, in the course of their studies, graduate students (1) will have acquired special competence in at least one field of knowledge; (2) will have developed further their ability to think independently and constructively; and (3) will have developed and demonstrated the ability to collect, organize, evaluate, and report facts which will enable them to make a contribution in their field of study.

DEGREES GRANTED

The Graduate School of North Carolina A&T State University offers the following degrees:

MASTER OF ARTS

English and Afro-American Literature

MASTER OF SCIENCE

- 1. Adult Education
- 2. Agricultural Economics
- 3. Agricultural Education
- 4. Biology
- 5. Chemistry
- 6. Engineering
- 7. Electrical Engineering
- 8. Industrial Engineering
- 9. Food and Nutrition
- 10. French
- 11. Industrial Education
 - A. Administration, Supervision and Post-Secondary Education
 - (1) Administration
 - (2) Supervision
 - B. Educational Media
 - C. Elementary Education and Reading
 - (1) Early Childhood Education
 - (2) Elementary Education
 - (3) Intermediate Education
 - (4) Reading
 - D. Guidance or Counselor Education
 - E. Safety and Driver Education
 - F. Specialized Secondary Education Teaching Fields with Majors in Subject-Matter Departments
 - (1) Art
 - (2) Biology
 - (3) Chemistry
 - (4) English
 - (5) History
 - (6) Mathematics
 - (7) Health and Physical Education
 - (8) Social Science

ADMISSION TO GRADUATE STUDY

All applicants for graduate study must have earned a bachelor's degree from a four-year college. Application forms may be obtained from the office of the Graduate School and must be returned to that office with two transcripts of previous undergraduate and graduate studies. Processing of applications cannot be guaranteed unless they are received, with all supporting documents, in the Graduate Office at least fifteen days before a registration period. Applicants may be admitted to graduate studies unconditionally, provisionally, or as special students.

Unconditional Admission. To qualify for unconditional admission to graduate studies, an applicant must have earned an over-all average of 2.6 on a 4 point system (or 1.6 on a 3 point system) in his undergraduate studies. In addition, a student seeking a degree in Agricultural Education, Industrial Education, or Secondary Education must possess, or be qualified to possess, a Class A Teaching Certificate in the area in which he wishes to concentrate his graduate

studies. A student seeking a degree with concentration in Administration and Supervision, Elementary Education, or Guidance must possess, or be qualified to possess a Class A Teaching Certificate.

Provisional Admission. An applicant may be admitted to graduate studies on a provisional basis if (1) he earned his baccalaureate degree from a non-accredited institution or (2) the record of his undergraduate preparation reveals deficiencies that can be removed near the beginning of his graduate study. A student admitted provisionally may be required to pass examinations to demonstrate his knowledge in specified areas, to take special undergraduate courses to improve his background, or to demonstrate his competence for graduate work by earning no grades below "B" in his first nine hours of graduate work at this institution.

Special Students. Students not seeking a graduate degree at A&T State University may be admitted in order to take courses for self-improvement or for renewal of teaching certificates. If a student subsequently wishes to pursue a degree program, he must request an evaluation of his record. The Graduate School reserves the right to refuse to accept as credit for a degree program hours which the candidate earned while enrolled as a special student; in no circumstances may the student apply towards a degree program more than twelve semester hours earned as a special student.

Admission to Candidacy for a Degree. Admission to graduate studies does not guarantee admission to candidacy for a degree. In order to be qualified as a candidate for a degree, a student must have a minimum over-all average of 3.0 in at least nine semester hours of graduate work at the University, must have removed all deficiencies resulting from undergraduate preparation, and must have passed the Qualifying Essay. Some departments require additional qualifying examinations. For details, see the Graduate School Bulletin.

Credit Requirements. The minimum course requirements for a graduate degree are thirty semester hours for students in thesis programs and non-thesis programs. It is expected that a student can complete a program by studying full-time for an academic year and a summer or by studying full-time during four nine-week summer sessions. A graduate student normally carries twelve to fifteen semester hours each semester of an academic year. If he is teaching full-time, he may not pursue more than six semester hours during the academic year. During the summer he may not earn more than one hour of credit for each week of residence. A student who does not complete his degree within six successive calendar years may lose credit for hours earned more than six years prior to his application for graduation.

Other Requirements. All students must pass a final comprehensive examination.

Fees. Fees for graduate students are listed in General Information section of this catalogue.

Financial Assistantships. A limited number of assistantships are available. These positions may require teaching, laboratory supervision, research, or general assistance to a department or to a faculty member.

THE GRADUATE SCHOOL BULLETIN

General requirements for the Master's degree, curricula, course, descriptions, and other information about graduate study will be found in the *Graduate School Bulletin*, which may be obtained from the Graduate Office.

For information write to: The Dean of the Graduate School, North Carolina Agricultural and Technical State University, Greensboro, N.C. 27411.



COURSE DESCRIPTIONS





Course Descriptions

Section 14

The following course descriptions reveal the number and name of the course, and a brief description, as well as the number of semester hours of credit earned and the number of actual lecture and laboratory hours met each week. For example—Credit 3(3-1), the 3 indicates that three semester hours of credit is given for satisfactory completion of the course. The (3-1) indicates that the course meets for three hours of lecture and for one hour of laboratory work each week.

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COURSES IN ACCOUNTING

Undergraduate

221. Principles of Accounting I

Credit 3(3-1)

Introduction to the basic records and procedures used by service and merchandising organizations in accumulating financial data with emphasis on statement presentation. Includes discussion of special problems of income measurement and asset valuation. Prerequisite: B.A. 220 and sophomore standing

222. Principles of Accounting II

Credit 3(3-1)

Continuation of Principles of Accounting I. Emphasis on financial statement interpretation and uses of accounting data by management for planning and control. Prerequisite: Acct. 221.

441. Intermediate Accounting I

Credit 3(3-1)

Rigorous study of the methodology and underlying theory of financial accounting. In-depth analysis of valuation alternatives, problems, and their effect on the income measurement. Prerequisite: Acct. 222.

442. Intermediate Accounting II

Credit 3(3-1)

A continuation of Accounting 441. A study of accounting theory and techniques underlying the determination of contents and values of accounts for the financial statement of a going concern. Prerequisite: Acct. 441.

443. Income Tax Accounting

Credit 3(3-1)

Study of current Federal Income Tax laws as they apply to individuals, partnerships, fiduciaries, and corporations. Prerequisite: Acct. 222.

444. Cost Accounting

Credit 3(3-1)

Study of the principles and methodology of inventory cost determination and its effect on income measurement for manufacturing concerns, including product, process, and standard cost systems. Special attention given to uses of accounting data as an aid in managerial planning and control. Prerequisite: Acct 441.

445. Selected Topics in Accounting

Credit 3(3-1)

Topics are chosen to give additional consideration to selected accounting problems. Some attention is given to not-for-profit accounting. Prerequisite: Acct. 441.

446. Managerial Accounting

Credit 3(3-1)

Development of accounting concepts and techniques as aids to management planning and control; including budgeting, cost behavior, cost-volume-profit analysis, and responsibility accounting. Prerequisite: Acct. 222.

545. Advanced Accounting

Credit 3(3-1)

Branches and agencies; mergers and consolidations; parent and subsidiaries; pooling of interest vs. purchases; foreign exchange; fund accounting; and special advanced topics. Prerequisite: Acct. 441.

561. Auditing Principles

Credit 3(3-1)

Concentrates on the conceptual and practical aspects of the examination of financial statements by independent accountants within the framework of generally accepted auditing standards. Prerequisite: Acct. 442.

562. Accounting Systems

Credit 3(3-1)

Focuses on current techniques of data processing with emphasis on principles of internal control. Prerequisite: Acct. 441.

590. Seminar in Accounting Theory

Credit 3(3-1)

The framework of ideas, concepts, and principles which make up the body of knowledge of accounting theory. Prerequisite: Acct. 442 and senior standing.

643. Advanced Income Tax Accounting

Credit 3(3-1)

Credit: 3(3-0)

Advanced treatment of the problems and opportunities of individuals, partnerships, fiduciaries, and corporations. Introduction to tax case research and preparation. Prerequisite: Acct. 443.

COURSES IN ADULT EDUCATION AND COMMUNITY SERVICES

340-651. Introduction to Adult Education

The purpose is to develop a view of Adult Education as a broad, diverse, and complex field of study, research and professional practice. Students will survey many institutions, firms, programs, and individual activities for insight into the scope of Adult Education, its client group, their reasons for becoming adult learners, and the range of methods and materials used to enable adults to learn.

Credit: 3(3-0)

Credit: 3(3-0)

Credit: 3(3-0)

Credit: 3(3-0)

340-652. Methods in Adult Education (Formerly Adult Ed. 761)

Methods of informal instruction, group leadership, conference planning and techniques in handling various issues of interest to adults. For persons preparing to conduct adult education programs as well as those preparing to serve as instructors or leaders in the public schools and/or in various agencies serving adults.

340-653. Adult Development and Learning

The focus is on adult development psychology and learning theory. Adult development and learning is grounded in human developmental psychology, and enables students to investigate the life. From the research literature of adult life stages, students will be asked to read works of Freud, Havinghurst, Erikson, Gould, Levinson, Vaillant, and Klemme.

340-654. Gerontology

The basic purpose of this course is to study the process of aging. Attention will be given to the influence of cultural, sociological, and economic factors. An important phase of the course will deal with planning for retirement.

340-650. Special Problems in Adult Education Credit: 3(3-0)

Special topics, individual and group study projects, research, workshops, seminars, summer institutes, travel study tours and organized visitations in areas of adult education worked out and agreed upon by participating students and the Department of Adult Education and Community Services.

Courses Restricted to Graduate Students Only

340-700. History and Philosophy of Adult/ Continuing Education

A study of historical and philosophical foundations and thought which have influenced how adult needs have been met through learning. Consideration will be given to the thinking upon which teaching and learning were based during ancient times through the present time.

340-701.Organization, Administration, and Supervision of Adult/Continuing Education Programs Credit: 3(3-0)

An examination of theories, concepts, and practices as related to the functions, planning, organizing, staffing, financing, motivating, decision-making, evaluating, and delegating in an Adult Education organization.

340-702. Practicum in Teaching Adults (Prerequisites: Adult Edu. 651, 653, and 700)

Practical experience in involving a group of adults in a teaching-learning experience. Under supervision, the practice teacher will have an opportunity to apply concepts, teaching methods, and instructional materials in a real life situation.

340-703. Seminar on Contemporary Issues in Adult/Continuing Education Credit: 1(1-0)

This course is integrative in nature, thereby offering the student an opportunity to synthesize concepts, theories, and methods of teaching/learning in earlier courses. Students will be encouraged to further explore areas of special interest.

340-704. Independent Study

This course permits a student to undertake an analysis of a problem, through individual study outside the traditional classroom setting. The problem may be selected from either travel, hobby, or a related job experience. (Prerequisite: Permission of the Instructor.)

340.705. Thesis Research in Adult Education

COURSES IN ADMINISTRATION, SUPERVISION AND POSTSECONDARY EDUCATION

Advanced Undergraduate and Graduate Courses

312-690. The Community College and Postsecondary Education

Credit 3(3-0)

Credit: 2(2-0)

Credit: To be arranged

Philosophy, organization and character of school programs needed to meet educational needs of individuals who desire to continue their education on the postsecondary level. Special attention is given to the trends in developing community colleges. Prerequisites: Education 727, or a graduate course in high school curriculum, Psychology 726, or graduate course in educational psychology, or three or more years of teaching experience.

Graduate Courses

312-755. Supervision of Instruction

Credit 3(3-0)

Modern concepts and techniques of supervision; the roles of the supervisor, principal, and consultant in curriculum development; and the procedures, problems, and materials of supervising and improving instruction in grades 1-12.

312-756. Supervision of Student Teachers

Credit 3(3-0)

A basic professional course for classroom teachers, principals, and supervisors who serve in an official capacity directing the field-laboratory experiences of student teachers.

312-757. Problems in Supervision of the Elementary School

Credit 3 (3-0)

The nature, theory, and practice of supervision, and the supervisor's role in improvement of instruction.

312-758. Problems in High School Supervision

Credit 3(3-0)

A study of problems, techniques, and materials in the improvement of instruction in secondary schools. A course for principals, heads of departments, and supervisors.

312-760. The Junior High School

Credit 3(3-0)

The philosophy, organization, administration, curriculum and activities of the junior high school.

312-761. School Organization and Administration

Credit 4 (4-0)

A comprehensive course in organization and administration of schools, grades K-12, placing primary emphasis on the following areas: (1) formal and informal organizational structure, concepts and practices; (2) the management processes; (3) the administrative functions, with particular reference to personnel, program, and fiscal management; and, (4) leadership styles and the leadership role, with special attention to planning, decision-making, and conflicting resolution.

312.762. The Principalship

Credit 3(3-0)

A professional education course for the principalship; examines the role of the principal in the modern school system with emphasis on planning, programming, and management functions.

312-763. Public School Administration

Credit 3(3-0)

Review of school administration, the organization and structure of the school system; agencies of administration and control, legal basis of school administration, standards for administration in the various functional areas.

312-764. Pupil Personnel Administration

Credit 3(3-0)

Public accounting, records and reports, financial reports, school census, special school records, pupil adjustment and progress, health and safety, and legal aspects of pupil administration.

312-765. School Publicity and Public Relations

Credit 3(3-0)

Study of the interrelationships between the lay community and the schools. Appraisal and procedures, actual or proposed, for improvement of the relationships.

312-766. School Planning

Credit 3(3-0)

An examination of the principles governing the selection and landscaping of school grounds, location and design of buildings, and care of plant from standpoint of use, sanitation, health and attractiveness.

312.767. Public School Finance

Credit 3(3-0)

A current study of the political, legal, and economic aspects of financing public education, with particular attention to school finance in North Carolina. Major areas include: (1) public education and the national economy; (2) the tax structure and sources of revenue, (3) resource allocation and methods of funding; (4) school finance reform; (5) school finance in North Carolina; and, (6) practical experience in budget planning and development.

312-768. Principles of School Law

Credit 3(3-0)

An analysis of the legal aspects of public education. Constitutional, statutory, and case law, with special attention to North Carolina law, provide the basis for understanding the legal framework and examining legal principles pertaining to such areas as: (1) church-state-education relations; (2) race-state-education relations; (3) school districts; (4) school boards; (5) finance; (6) curriculum; (7) property, (8) teacher personnel; and, (9) pupil personnel.

312-769. Problems in Educational Administration and Supervision

Credit 3(3-0)

An internship of field study on a supervised project arising out of the needs of the student. Prerequisite: 15 graduate hours, including Organization and Administration, Supervision, and Curriculum.

312.776. Principles of College Teaching

Credit 3(3-0)

Principles involved in teaching at the college level; techniques of teaching aids, criteria used in evaluation. Prerequisite: Psychology 726, or graduate course in educational psychology.

312-777. Seminar in Postsecondary Education

Credit 3(3-0)

A synthesis of current research in postsecondary education relating to administration, curriculum, and faculty development. Prerequisite: Education 690.

312-778. Student Personnel Services

Credit 3(3-0)

Analysis of student development programs in postsecondary institutions, including pre-admission, educational, vocational, and personal counseling; career guidance services, attitude and interest assessment, student affairs, rights and responsibilities, and financial aid.

312-779. Technical Education in Community Junior Colleges

Credit 3(3-0)

Offers techniques in identifying community needs and in planning curriculums and courses for technical/vocational education. Stresses the role of the two-year college in middle manpower development.

312-781. Internship

Credit 3(3-0)

Offers opportunities for students to spend one semester as a teaching or administrative intern in a community college or technical institute in the North Carolina Community College System. Registration only by permission of the instructor.

312-A785. Independent Readings in Education I

Credit 1(0-2)

Individual study and selected readings in consultation with an instructor. Prerequisite: 24 hours of graduate credit.

312-A786. Independent Readings in Education II

Credit 2(0-4)

Individual study and selected readings in consultation with an instructor. Prerequisite: 24 hours of graduate credit.

312-A787. Independent Readings in Education III

Credit 3(0-6)

Individual study and selected readings in consultation with an instructor. Prerequisite: 24 hours of graduate credit.

312-A790. Seminar in Educational Problems

Credit 3(3-0)

Intensive study, investigation, or research in selected areas of education; reports and constructive criticism. Prerequisite: A minimum of 24 hours in prescribed graduate courses.

312-A791. Thesis Research

Credit 3(3-0)

312-792. Advanced Seminar and Internship in Educational Administration

Credit 3(3-0)

Seminar and supervised internship experiences relating to problems in administration and to the needs and interests of the student. (Restricted to students in the Sixth-Year Program in Administration.)

COURSES IN AEROSPACE STUDIES

General Military Course (Basic)

Courses for Freshmen

101. The U.S. Air Force Today I

Credit 1(1-0)

A study of the doctrine, mission, and organization of the United States Air Force, U.S. Strategic offensive and defensive forces; their mission and functions; employment of nuclear weapons. (Fall semester)

102. Leadership Laboratory

Credit 0(0-1)

Must be taken in conjunction with A.S. 101.

103. The U.S. Air Force Today II

Credit 1(1-0)

A study of aerospace defense; missile defense; U.S. general purpose and aerospace support forces: the mission, resource and operation of tactical air forces, with special attention to limited war; review of Army, Navy, and Marine general purpose forces. (Spring Semester)

104. Leadership Laboratory

Credit 0(0-1)

Must be taken in conjunction with A.S. 103.

Courses for Sophomores

201. The Development of Air Power 1.

Credit 1(1-0)

An introduction to the study of Air Power. The course is developed from a historical perspective starting before the Wright Brothers and continuing through World War II. The text U.S. Air Power; Ascension to Prominence describes the development of air power from Kitty Hawk through WW II. (Fall Semester)

202. Leadership Laboratory

Credit 0(0-1)

Must be taken in conjunction with A.S. 201.

203. The Development of Air Power II.

Credit 1(1-0)

A study of a quarter century of Air Power begins with the Berlin Airlift and includes major events through Vietnam in 1971. Chapters in the text, A Quarter Century of Air Power, were written by various military and civilian Air Force historians specifically for this course. (Spring Semester)

204. Leadership Laboratory

Credit 0(0-1)

Must be taken in conjunction with A.S. 203.

Courses for Juniors

401. The Professional Officer I.

Credit 3(3-0)

An integrated management course emphasizing the individual as a manager in an Air Force environment. Individual motivation and behavioral processes, communication, and group dynamics are covered to provide a foundation for the development of the junior officer's professional skills. The basic managerial processes involving decision-making, planning, organizing, and controlling are emphasized. Attention is focused on the progressive development of communicative skills needed by junior officers. (Fall Semester)

402. Leadership Laboratory

Credit 0(0-1)

Must be taken in conjunction with A.S. 401.

403. The Professional Officer II.

Credit 3(3-0)

A study of leadership theory and its application to real-world problems. Traces the development of leadership theory and emphasizes the leadership role of Air Force officers. (Spring Semester)

404. Leadership Laboratory

Credit 0(0-1)

Must be taken in conunction with A.S. 403.

505. Flight Training-Ground School

Credit 3(3-0)

Academic instruction devoted to Federal Aviation Regulations, Meteorology, Navigation, Computers, and Radio Navigation. (Required of all Pilot Trainees, open to all other students.)

506. Flight Training-Flying

Credit 3(3-0)

Flight instruction provided to teach the fundamentals to take-offs, landings, stalls, steep turns, traffic patterns, air discipline, basic flight maneuvers, emergency procedures and cross-country flights. (Required for all Pilot Trainees. Only advanced POC Cadet Pilot Trainees will be offered Flying training at AFROTC expense.)

Courses for Seniors

501. Nat. Security Forces in Contemporary Am. Society I.

Credit 3(3-0)

This course is conceptually focused on the Armed Forces as an integral element of society with emphasis on the broad range of American Civil-Military

relations and the environmental context in which U.S. defense policy is formulated and implemented. The student will be expected to prepare individual and group presentations for the class, write reports, and otherwise participate in group discussions, seminars, and conferences. (Fall Semester)

502. Leadership Laboratory

Credit 0(0-1)

Must be taken in conjunction with A.S. 501.

503. Nat. Security Forces in Contemporary Am. Society II.

Credit 3(3-0)

This course is a continuation of AS 401. The student will be expected to use the analytical skills gained in AS 401 to predict the outcome of the situations in the world. Special themes include: societal attitudes toward the military; the role of the professional military leader-manager in a democratic society, the fundamental values and socialization processes associated with the Armed Services; the requisities for maintaining adequate national security forces; political, economic and social constraints on the national defense structure. The student will be aware of the impact of technological and international development of strategic preparedness. Military justice and administrative law are discussed within the context of the military organization (Spring Semester)

504. Leadership Laboratory

Credit 0(0-1)

Must be taken in conjunction with A.S. 503.

COURSES IN AGRICULTURAL ECONOMICS

Undergraduate

330. Introduction to Agricultural Economics (Formerly Ag. Ec. 1121)

Credit 3(3-0)

An application of the fundamental principles of economics to agricultural production, marketing, land tenure, leasing arrangements, financing and related economic problems.

332. Elements of Farm Management (Formerly Ag. Ec. 1122)

Credit 3(2-2)

Principles which govern the effective organization and operation of the farm firm.

334. Marketing Agricultural Products (Formerly Ag. Ec. 1141)

Credit 3(3-0)

Principles and practices of marketing as applied to farm commodities. Form, place, time and possession utility, the ultimate consumer's market, the

agricultural industries market, the middleman system, exchange market operation and futures contracts, price determination, reducing marketing costs. Visits will be made to local markets. Prerequisite: Ag. Econ. 330.

336. Agricultural Prices (Formerly Ag. Ec. 1142)

Credit 3(2-2)

Information regarding agricultural price changes, index numbers, price determination, seasonal and cyclical price movements, storage problems, and other methods of controlling extreme price fluctuations, government price policy.

440. Resource Economics (Formerly Ag. Ec. 1162)

Credit 3(3-0)

Analysis of Economic problems of resources use and management. Perception of and definition of problems in terms of allocation mechanism. Analysis of Economic relationships over time and market externalities with emphasis on welfare implications. Prerequisite: Economics 302.

442. Cooperative Marketing (Formerly Ag. Ec. 1163)

Credit 2(2-0)

Early cooperative movements, principles of cooperatives, importance of cooperatives in the United States, problems of organization, management and operation of cooperative endeavors by farmers in buying and selling. Prerequisities: Ag. Econ. 330, 334.

444. Marketing Dairy Products (Formerly Ag. Ec. 1164)

Credit 3(2-2)

Economic problems in procuring milk and cream, in processing and distributing fluid milk, cream and manufacturing dairy products; marketing legislation, market news, market methods, including cooperation, consumer demand and price policy. Prerequisite: Ag. Econ. 334

530. Economics of Food Distribution (Formerly Ag. Ec. 1165)

Credit 3(3-0)

Description of market structures and operations in the processing, wholesale and retail distribution of food. The effect of industrial organization and government regulations on the efficiency of the market and consumers demand for food.

532. Agricultural Economics Research (Formerly Ag. Ec. 1116)

Credit 3(3-0)

Review of different types of research methodology in the field of Agricultural Economics. Prerequisite: Consent of the Department Chairman.

Advanced Undergraduate and Graduate

630. Southern Resources in A Changing Economy— A Seminar

Credit 3(3-0)

Trends and the formulation of economic and social problems in the South and particularly in North Carolina; labor and capital mobility, agricultural as compared with the industrial, the problem of underemployment, and important phases of current economic development. Prerequisite: Economics 301, Sociology 203 or Ag. Econ. 330.

632. Agri-Business Policy (Formerly Ag. Ec. 1171)

(Formerly Ag. Ec. 1170)

Credit 3(3-0)

The place of Agri-business in the National and International economy; the impact of public policy on the industry. An analysis of policy as it relates to price support programs, finance, trade and resource development. Prerequisite: Ag. Econ. 330.

634. Commodity Marketing Problems (Formerly Ag. Ec. 1172)

Credit 3(3-0)

Economic problems arising out of the demand, supply and distribution of specific agricultural commodities; the price making mechanism, marketing methods, grades, values, price, cost, and governmental policy. Not more than two commodities will be studied in any one quarter. Selection of commodities and emphasis on problem areas will be made on the basis of current need; commodities studied will be cotton, tobacco, fruits and vegetables, and grains. Prerequisite: Consent of the Department Chairman.

636. Seminar in Marketing Farm Products (Formerly Ag. Ec. 1173)

Credit 3(3-0)

Discussion, reports, consultation and research efforts which throw light on marketing problems of low income farmers in North Carolina including National and International importance of locally grown products such as tobacco and cotton. Prerequisite: Consent of the Department Chairman.

638. Special Problems in Agricultural Economics Credit 3(1-2) (Formerly Ag. Ec. 1174)

Designed for students who desire to work out special problems in the field of agricultural economics; problem definition, formulation and investigation. Prerequisite: Consent of the Department Chairman.

640. Agri-Business Management (Formerly Ag. Ec. 1174)

Credit 3(2-2)

Methods of research, plans, organization, and the application of management principles. Part of the student's time will be spent in consultation with Agri-business firms. Prerequisite: Consent of Department Chairman.

642. Seminar in Agricultural Economics (Formerly Ag. Ec. 1176)

Credit 2(2-0)

Discussion reports and an appraisal of current literature on agricultural problems. Prerequisite: Consent of the Department Chairman.

644. Statistical Methods in Agricultural Economics I (Formerly Ag. Ec. 1177)

Statistical methods with special applications to agricultural problems. The statistical table, ratios, percentages, bar charts, line charts, and frequency distribution are used as analytical tools. Prerequisites: Ag. Econ. 330, Econ. 301 or Sociology 203.

646. Statistical Methods in Agricultural Economics II. Credit 3(2-2) (Formerly Ag. Ec. 1178)

Statistical methods with special applications to agricultural problems. The time series analysis, sampling theory, analysis of variance, and simple correlation are used as analytical tools. This course is a continuation of Ag. Econ. 664.

648. Appraisal and Finance of Agri-Business Firms

Credit 3(3-0)

(Formerly Ag. Ec. 1179)

Principles of land evaluation, appraisal and taxation. The role of credit in a money economy, classification of credit, principles underlying the economic use of credit. The role of the government in the field of credit.

Courses in Rural Sociology

Undergraduate

300. Principles of Rural Sociology

Credit 3(3-0)

Social systems, cultural patterns, and institutional arrangement of people in rural environments.

An interpretation of the structure, functioning and change in rural social systems.

501. Rural Social Problems

Credit 3(3-0)

A focus on the problems and solutions of population dynamics, education, religion, health, land tenure, parity income, farm labor, mechanization, housing, poverty, and rural development as they affect the growth of the rural community.

503. Rural Family

Credit 3(3-0)

The institutional nature of the rural family, etc., role in the community including its relations to educational, religious, welfare and other community organizations.

505. Rural Standards of Living

Credit 3(3-0)

Consumption behavior in the main community groups of our rural society. The poverty threshold and the plight of the rural poor.

506. Special Problems in Rural Sociology.

Credit 2 to 4 hrs.)

Work on problems in the rural society under the guidance of a faculty member.

Advanced Undergraduate and Graduate

602. Rural Leadership and Organization

Opportunities and needs for rural leadership; educational and psychological requirements for various types of rural leaders.

Research contributions of social, psychological and cultural Anthropology in developing viable rural organization and leadership.

COURSES IN AGRICULTURAL AND EXTENSION EDUCATION

Undergraduate

101. Introduction and Orientation (Formerly General Agriculture 1000)

Credit 1(1-0)

A study of the broad base of modern agriculture with emphasis on current trends and opportunities.

102. Introduction and Orientation (Formerly General Agriculture 1001)

Credit 1(1-0)

A continuation of 101 with special emphasis on the development of agriculture as a modern technology and the impact of science on its development.

400. Audio-Visual Aids in Vocational and Technical Education (Formerly Ag-Ed 1240) Credit 2(1-2)

Techniques in preparing, using, and evaluating audio-visual aids in vocational and technical education.

401. Youth Organizations and Leadership (Formerly Ag-Ed 1241)

Credit 2-3(3-0)

Practices and procedures of leadership development and the organization of youth groups in secondary schools, agricultural extension, and other community programs.

402. Secondary Education in Agriculture (Formerly Ag-Ed 1242)

Credit 2(2-0)

Designed to acquaint students with the historical objectives of vocational education and agriculture, the problems in the area of secondary schools, and some solutions.

403. Teaching Out-of-School Groups (Formerly Ag-Ed 1243)

Credit 2(2-0)

Methods and materials used in teaching adults and young farmers. It will include developing and using various teaching devices and aids for out-of-school groups.

404. Supervised Field Experiences

Credit 3(3-0)

Participation in supervised professional activities in vocational agriculture, cooperative extension, and other agricultural education programs. Repeatable to a maximum of nine credits.

404.01. Field Experiences in Vocational Agriculture

Participation in activities relating to programs, methods and skills basic to teaching vocational agriculture.

404.02. Field Experiences in Cooperative Extension

Participation in experiences involving cooperative extension programs.

404.03. Field Experiences in Other Agricultural Education Programs

Participation in experiences in Agricultural Education other than vocational agriculture and cooperative extension.

501. Materials and Methods of Teaching Agricultural Education (Formerly Ag-Ed 1261)

Credit 3(3-0)

Principles of teaching as applied to agriculture in secondary schools. Preparing and using lesson plans and organizing teaching aids to meet community needs. Prerequisites: Agricultural Education 400, 401 and 402; Psychology 320.

502. Student Teaching (Formerly Ag-Ed 1262)

Credit 6(6-0)

Students will be required to spend twelve weeks in an approved teaching center doing observation and directed student teaching. Prerequisite: Agricultural Education 501.

503. Evaluation and Problems in Teaching Agricultural Education (Formerly Ag-Ed 1263)

Credit 3(3-0)

The process of discovering and analyzing problems in the field; program building, and evaluation of instruction. This will include an appraisal of all phases taught by the teacher of agriculture. Prerequisites: Agricultural Education 501 and 502.

Advanced Undergraduate and Graduate

601. Adult Education in Vocational Education (Formerly Ag-Ed 1271)

Credit 3(3-0)

A study of the principles and problems of organizing and conducting programs for adults. Emphasis is given to the principles of conducting organized instruction in agriculture and related industries.

603. Problem Teaching in Vocational Education Credit 3(3-0) (Formerly Ag-Ed 1273)

Practices in setting up problems for teaching unit courses in vocational education

604. Public Relations in Agriculture (Formerly Ag-Ed 1274)

Credit 3(3-0)

Principles and practices of organizing, developing, and implementing public relations for promoting local programs in vocational agriculture and agricultural extension.

605. Guidance and Group Instruction in Vocational Education

Credit 3(3-0)

(Formerly Ag-Ed 1275)

Guidance and group instruction applied to agricultural occupations and other problems of students in vocational education.

606. Cooperative Work-Study Programs

Credit 3(3-0)

Principles, theories, organizations, and administration of cooperative work experience programs.

607. Environmental Education

Credit 3(3-0)

Principles and practices of understanding the environment and the interrelated complexities of the environment. The course will include a study of agricultural occupations related to the environment and materials that need to be developed for use by high school teachers of agriculture and other professional workers.

608. Agricultural Extension Organization and Methods

Credit 3(3-0)

Principles, objectives, organization, program development, and methods in cooperative extension.

609. Community Analysis and Rural Life

Credit 3(3-0)

Educational processes, structure and function of rural society, and the role which diverse organizations, agencies, and institutions play in the education and adjustment of rural people to the demands of modern society.

664. Occupational Exploration of Middle Grades

Credit 3(3-0)

Designed for persons who teach or plan to teach middle grades occupational exploration programs. Emphasis will be placed on occupational exploration in the curriculum, sources and uses of occupational information, approaches to middle grades teaching, and philosophy and concepts of occupational education. This course will be taught in cooperation with the Department of Business Education and Administrative Services, Home Economics, and Industrial Education.

665. Occupational Exploration in the Middle Grades— Agricultural Occupations

Credit 3(3-0)

Emphasis will be placed on curriculum, methods and techniques of teaching, and resources and facilities for teaching in the agricultural and environmental occupations cluster including Agribusiness and Natural Resources, Environmental Control, Hospitality and Recreation, and Marine Science.

Graduate

These courses are open to graduate students only. See the Bulletin of the Graduate School for course descriptions.

700.	Seminar in Agricultural	Education
	(Formerly Ag-Ed 1285)	

Credit 3(3-0)

Credit 1(1-0)

702. Methods and Techniques of Public Relations (Formerly Ag-Ed 1286)

703. Scientific Methods in Research (Formerly Ag-Ed 1287)

Credit 3(3-0)

704. History and Philosophy of Vocational Education Credit 3(3-0) (Formerly Ag.-Ed 1288)

705. Recent Developments and Trends in Agricultural Education (Formerly Ag-Ed 1289)	Credit 3(3-0)
706. Comparative Education in Agriculture	Credit 3(3-0)
707. Issues in Community Development and Adult Education	Credit 3(3-0)
750. Community Problems (Formerly Ag-Ed 1290)	Credit 3(3-0)
752. Administration and Supervision (Formerly Ag-Ed 1292)	Credit 3(3-0)
753. Program Planning (Formerly Ag-Ed 1293)	Credit 3(3-0)
754. History of Agricultural Education (Formerly Ag-Ed 1294)	Credit 3(3-0)
760. Thesis Research in Agricultural Education	Credit 3(3-0)

COURSES IN ANIMAL SCIENCE

Undergraduate

110. Science of Animals that Serve Mankind

Credit 3(3-0)

Credit 3(3-0)

(Formerly Ag-Ed 1299)

A study of the fundamental principles of animal science for those students not majoring in the animal sciences. Emphasis will be on the role of animals that serve mankind.

111. Introduction to Animal Science Credit 3(2-2) (new course replacing 301, but including basic material from 311 and 317)

A study of the application of basic sciences—animal genetics, physiology, nutrition and disease control—to improve dairy, livestock and poultry production, processing and merchandising.

212. Applied Nutrition and Feeding (formerly 404)

Introduction to principles of nutrition on a comparative species basis, composition of feeds and principles of feeding.

Prerequisite: Animal Science 111.

214. Agricultural Genetics

Credit 3(2-2)

A study of the basic principles of heredity in relation to animal and plant improvement. Laboratory work dealing with the cytological and genetical basis of inheritance.

Prerequisites: Biology 100, Botany 130 or Zoology 160.

217. Anatomy and Physiology of Farm Animals (formerly 441)

Credit 3(2-2)

Study of functions and structures of the body systems and organs of domestic animals, with emphasis on applied physiology.

Prerequisite: Animal Science 111, Zoology 160.

311. Livestock Production (formerly 320)

Credit 3(2-2)

Selection, breeding, feeding, housing and general management of beef cattle, sheep and swine.

Prerequisite: Animal Science 212.

312. Meat and Meat Products (formerly 401)

Credit 3(2-2)

Introduction of meats from the standpoint of the consumer, processor and producer. Emphasis on meat as a food; inspection, grading, processing, preservation and identification.

313. Livestock Evaluation

Credit 1(0-3)

(new course, replaces part of 302)

Study of correlation of type, grade, degree of finish and other factors in the live animals with carcass grade, yield and value in cattle, sheep and swine. Objective and subjective selection of herd replacements.

Prerequisite: Junior standing. Animal Science 111.

315. Horse Production

Credit 3(2-2)

A survey of the light horse industry in the United States including the various breeds and registry associations. Also stressed will be comparative judging of breed groups, preventative procedures and control of diseases, and the breeding, care and management of the light horse.

413. Sanitation and Diseases of Farm Animals (formerly 443)

Credit 2(2-0)

Sanitation and the common diseases of livestock with reference to causes, prevention and treatment and their relation to the environment.

Advanced Undergraduate and Graduate

611. Principles of Animal Nutrition (formerly 601)

Credit 3(3-0)

Fundamentals of modern animal nutrition including classification of nutrients, their general metabolism and role in productive functions. Prerequisite: Animal Science 212.

612. Experimental Nutrition Laboratory

Credit 2(0-6)

Analysis of feedstuffs and laboratory studies of nutrient utilization by monogastric and ruminant animals.

Prerequisite or corequisite: Animal Science 611.

613. Livestock and Meat Evaluation (new course, replaces part of 302)

Credit 2(1-2)

Selection and evaluation of desirable animals in both market and breeding classes. Identification and evaluation of wholesale and retail cuts of meat. Prerequisite: Animal Science 312 and 313.

614. Animal Breeding (formerly 402)

Credit 3(3-0)

Application of genetic and breeding principles of livestock production and improvement. Phenotypic and genotypic effects of selection methods and systems of mating

Prerequisite: Animal Science 111 and 214, or equivalent.

615. Selection of Meat and Meat Products (formerly 692)

Credit 3(2-2)

Identification, grading and cutting of meats.

617. Physiology of Reproduction of Farm Animals (formerly 442)

Credit 3(2-2)

Study of reproductive processes including anatomy, physiology and endocrinology. Semen production, artificial insemination and hormonal studies. Prerequisite: Arrimal Science 111 and Zoology 160.

618. Seminar in Animal Science

Credit 1(1-0)

(formerly Animal Science 602, Dairy Science 604, Poultry Science 608)

A review and discussion of selected topics and recent advances in the fields of animal and food science.

Prerequisite: Senior standing.

619. Special Problems in Livestock Management (formerly 603)

Credit 3(3-0)

Special work in problems dealing with feeding, breeding and management in the production of beef cattle, sheep and swine.

Prerequisite: Senior standing.

713. Advanced Livestock Production (formerly 703)

Credit 3(2-2)

Review of research relating to various phases of livestock production; fitting the livestock enterprise into the whole farm system. Special attention to overall economic operation.

Courses in Dairy Science

Undergraduate

321. Dairy Cattle Production (formerly 311 and 430)

Credit 3(2-2)

Management and selection for efficient milk production. Lactation, care of dairy equipment, use of records and housing of dairy cattle.

Prerequisite: Animal Science 212.

323. Dairy Cattle Evaluation (formerly 445)

Credit 1(0-2)

Characteristics of dairy breeds, comparative judging, selection of dairy cattle, sire selection and pedigrees.

Prerequisite: Animal Science 111.

338. Regulatory and Quality Standards (formerly 313)

Credit 3(2-2)

Principles of quality control. Functional aspects of industrial quality control and the food regulatory agencies. Review of existing regulatory codes and the development of statistical quality control sampling plans.

Prerequisite: Mathematics 224.

340. Milk and Milk Products (formerly 407 and 409)

Credit 3(2-2)

Study of the chemistry of milk, milk processing, milk products and quality. Prerequisite: Chemistry 102 or 107.

420. Food Microbiology (formerly Dairy Microbiology 420)

Credit 4(2-4)

A systematic study of the major groups of microorganisms of importance in foods. Emphasis is focused on the roles played by these microorganisms in food fermentation, food preservation and public health.

Prerequisite: Bacteriology 121.

522. Food Engineering (formerly Diary Eng. 522)

Credit 3(2-2)

Fundamentals of heat transfer, fluid flow, refrigeration, evaporation and other unit operations in the food processing industry. Application of engineering principles and concepts to the processing of foods.

Prerequisite: Physics 201 or 225.

536. Food Plant Management (formerly 405)

Credit 2(1-2)

Organization and management of food plants. Procurement of raw material supplies, plant layout, equipment for plants, distribution of products, costs of operation and record keeping.

541. Food Packaging

Credit 2(2-0)

Characteristics of packaging materials, strength, elasticity, permeability, food packaging machines, adhesives, as related to product wholesomeness and package design as a form of advertising.

Prerequisite: Chemistry 102 or 107.

Advanced Undergraduate and Graduate

629. Special Problems in Dairy Management (formerly 692)

Credit 3(3-0)

Special work in problems dealing with dairy production. Prerequisite: Senior standing.

Courses in Poultry Science

Undergraduate

351. Poultry Production (formerly 317)

Credit 3(2-2)

Practices and principles of poultry production. Prerequisite: Animal Science III. 354. Fundamentals of Poultry Breeding (formerly 330)

Credit 4(3-2)

Breeding and selection and improvement of stock. Prerequisite: Animal Science 214 and Poultry Science 351.

553. Diseases and Parasites of Poultry (formerly 501)

Credit 3(2-2)

Poultry hygiene: causes of diseases; symptoms and control of diseases and parasites.

Prerequisite: Poultry Science 351.

(formerly 505)

555. Incubation and Hatchery Management (formerly 503)

Credit 4(2-4)

Management of poultry farm and hatchery operation. Prerequisite: Poultry Science 351.

556. Processing and Marketing of Poultry Products Credit 3(2-2)

Methods of killing, dressing, grading and storage of poultry meats and the grading and storage of eggs. Transportation of poultry products and factors influencing price.

Advanced Undergraduate and Graduate

657. Poultry Anatomy and Physiology (formerly 609)

Credit 3(2-2)

A course which deals with the structure and function of tissues, organs, and systems of the domestic fowl. Prerequisite: Poultry Science 351.

659. Special Problems in Poultry (formerly 690)

Credit 3(3-0)

Assignment of work along special lines in which a student may be interested, given largely by project method for individuals in Poultry Science. Prerequisite: Three advanced courses in Poultry Science.

750. Poultry Research (formerly 780)

Credit 3(0-6)

Courses in Veterinary Animal Science

Undergraduate

161. Orientation I

Credit 1(1-0)

A general orientation to college academic life with consideration for program demands, learning techniques and resources.

162. Orientation II

Credit 1(1-0)

Introduction to various professional careers and opportunities related to Veterary Medicine.

261. Medical Terminology

Credit 2(2-0)

An introduction to medical terminology with emphasis on vocabulary building using Latin and Greek prefixes, suffixes, word roots and combining forms.

361. Developmental Anatomy of Domestic Animals Credit 4(3-3)

Origin, development, and structure of bio-systems in laboratory animals, farm animals and companion animals.

363. Pre-Veterinary Internship I

Credit 6(6-0)

On campus preparation and field experiences in Veterinary medical activities. Prerequisite: Junior standing and special Departmental permission.

461. Physiology of Domestic Animals

Credit 3(2-3)

Study of function of bio-systems in laboratory animals, farm animals and companion animals.

Prerequisite: Animal Science 361 or Departmental permission.

462. Principles of Medical Science

Credit 3(3-0)

Discussion of basic topics which provide insight to causative agents in disease and resultant biological reactions, economic losses, and decrease performance levels.

Prerequisite: Micro-biology 121.

463. Pre-Veterinary Internship II

Credit 6(6-0)

Field experiences in Veterinary Medical activities. Prerequisite: VAS 363.

464. Types and Breed of Food Animals

Credit 3(3-0)

A study of the origin, characteristics, behavior and identification of major breeds and types of food animals.

465. Types and Breeds of Companion Animals

Credit 3(3-0)

A study of the origin, characteristics, behavior and identification of major breeds and types of companion animals.

562. Environmental Toxicology

Credit 3(2-3)

Study of toxic principles and identification of poisonous plants, study of toxicity in agricultural chemicals, and animal feeds.

Prerequisite: VAS 462.

564. Introduction to Research

Credit (2-5)

Courses in Food Science and Technology Programs

Undergraduate

135. Food and Man's Survival (also Food and Nutrition 135)

Credit 3(3-0)

Acquaint students with most common information regarding foods, nutrition and health, with attempts to dispel misconceptions about food properties and factors affecting the quality of foods. Areas of discussion include man's struggle for foods; chemical additives and food safety; modern food preservation, organic and health foods; nutrition and the consumer.

236. Introduction to Food Science (also Food and Nutrition 236)

Credit 3(2-2)

An introductory study of the nature of raw foods and behavior of food components during handling and processing. Key methods and principles of food preservation will also be discussed.

337. Introduction to Human Nutrition (also Food and Nutrition 337)

Credit 3(2-2)

An introductory approach to the principles of nutrition as they relate to human requirements.

Prerequisites: Chem. 105, 115, or 222, 224, and Biol. 461.

338. Regulatory and Quality Standards (also Animal Science 338)

Credit 3(2-2)

Principles of quality control. Functional aspects of industrial quality control and the food regulatory agencies. Review of existing regulatory codes and the development of statistical quality control sampling plans.

340. Milk and Milk Products (also Animal Science 409)

Credit 3(2-2)

A study of the chemical and physical properties of milk and the principles involved in the manufacture of specific dairy products such as ice cream, cottage cheese, cheddar cheese, and butter.

401. Meat and Meat Products (also Animal Science 401)

Credit 3(2-2)

The study of the principles and practices involved in processing meat and meat products as they relate to beef, pork, and lamb and their products. Factors affecting quality, palatability, and consumer selection will also be studied.

437. Cooperative Training in Industry I (also Food and Nutrition 437)

Credit (1-3)

Student must be in industry full time one semester or summer in his major field of work, and complete the University Co-op requirements. He will be evaluated on reports from the industry and a University coordinator. Twelve credit hours is the maximum to be earned in the Co-op arrangement that can be used as electives toward degree programs in the School of Agriculture.

522. Food Engineering (also Animal Science 522)

Credit 3(2-2)

Fundamentals of heat transfer, fluid flow, refrigeration, evaporation and other unit operations in the food processing industry. Application of engineering principles and concepts to the processing of foods. Prerequisite: Physics 201 or 225.

536. Food Plant Management (also Animal Science 536)

Credit 2(1-2)

Organization and management of food plants. Procurement of raw material supplies, plant layout, equipment for plants, distribution of products, costs of operation and record keeping.

541. Food Packaging (also Animal Science 541)

Credit 2(2-0)

Characteristics of packaging materials, strength, elasticity, permeability, food packaging machines, adhesives, as related to product wholesomeness and package design as a form of advertising.

Prerequisite: Chem. 102 or 107.

547. Cooperative Training in Industry II (also Food and Nutrition 547)

Credit (1-3)

The description of this course is the same as Food and Nutrition 437, and is normally the second Co-op experience of the student.

556. Poultry Products (also Animal Science 556) Credit 3(2-2)

Methods of killing, dressing, grading and storage of poultry meats and the grading and storage of eggs: transportation of poultry products and factors influencing price.

Advanced Undergraduate and Graduate

618. Food Technology Seminar (also Animal Science 618)

Credit 1(1-0)

A review and discussion of selected topics and recent advances in the fields of animal and food science. Prerequisite: Senior standing.

629. Special Problems in Dairy Management Credit 3(3-0) (also Animal Science 629)

Special work in problems dealing with dairy production. Prerequisite: Senior standing.

631. Advanced Food Science

Credit 3(3-0)

A study of the chemical and physical properties of components of raw foods and behavior of the food components during processing and storage.

635. Food Analysis (also Food and Nutrtiion 635) Credit 3(1-4)

Fundamental chemical, physical and sensory aspects of food composition as they relate to physical properties, acceptability and nutritional value of foods. Prerequisite: Chem. 102 and Food Technology 236.

637. Special Problems in Food Nutrition and Food Science Credit 3(0-6) (also Food and Nutrition 637)

Independent study and/or research with a staff member in the areas of Food Science and Food and Nutrition. Prerequisite: Junior, Senior, or Graduate standing, and consent of the instructor

643. Food Preservation (also Food and Nutrition 643) Credit 3(2-2)

Harvesting, assembling and receiving of food materials, major unit operation and current methods of preserving foods including canning, freezing, dehydration, radiation and fermentation. Prerequisite: Chemistry 101 and Food Science 236.

647. Cooperative Training in Industry III (also Food and Nutrition 647)

Credit (1-6)

The description of this course is the same as Food and Nutrtion 437, and is normally the third Co-op experience for the student.

COURSES IN ARCHITECTURAL ENGINEERING

111. Architectural Engineering Communications

Credit 2(2-0)

Lecture, Seminar, and Laboratory Demonstration: An analysis of architectural engineering—preparation, opportunities and professional contributions. Selected lectures and laboratory demonstrations are provided. Individual and group participation of students are encouraged. Introduction to use of computers. Prerequisite: Architectural Engineering Freshman.

221. Architectural Graphics and Communications I Credit 3(0-6)

Laboratory-lecture course: Orthographic and auxiliary projections, surface intersections and development, oblique and isometric drawing. Use of computers to solve architectural and engineering problems. Prerequisite: Architectural Engineering III or equivalent.

222. Architectural Graphics and Communications II Credit 3(0-6)

Laboratory-lecture course: Shades and shadows, perspective drawing, study of the architectural plan, elevation and section, architectural presentation studies in pencil, pen and ink and water color. Prerequisite: Architectural Engineering 221.

223. Environmental Control Systems for Building I Credit 3(2-1)

Lecture and laboratory. Electrical and mechanical systems for environmental control of buildings. Comparative analyses of various environmental systems and their relation to building design. Elements of basic theory used in the design of electrical and mechanical systems and the controlled environment, for buildings. Prerequisite: Mathematics 117 or sophomore standing.

224. Architectural Engineering Projects Credit Variable (1 to 3)

Lecture and individual instruction: A project of mutual interest to a student and a teacher will be completed. Training shall be within one or more of the educational divisions of architectural engineering. Prerequisite: Sophomore standing in architectural engineering.

331. Architectural Design I

Credit 3(0-6)

Laboratory-lecture course. Designed to introduce the basic fundamentals of design, and as they are applied to architecture; influences on architecture, space

relationships, form and visible structure. A series of problems is presented in the design of buildings having simple requirements. Prerequisite: Architectural Engineering 222.

332. Architectural Design II

Credit 3(0-6)

Laboratory-lecture course. Presenting a series of problems in space organization and planning with the study of composition and structure. Prerequisite: Architectural Engineering 331.

333. History of Architecture I

Credit 3(3-0)

Illustrated lecture. The early architecture and civilizations of Egypt, Western Asia, Greece and Italy; architectural developments by the Early Christian and Byzantine builders, and a building study of the architecture and civilizations of the medieval period. Prerequisites: Architectural Engineering 222 and Humanities 200.

334. History of Architecture II

Credit 3(3-0)

Illustrated lecture. The architecture and civilizations of the medieval period, and the architecture and civilizations of the Renaissance and of the Early Americas. Prerequisite: Architectural Engineering 333.

335. Structural Systems I

Credit 3(1-4)

Lectures and Laboratory work. Analysis and design of structural systems—an overview. Numerical and graphical analyses and solutions. Comparative evaluation of structural systems—environmental, aesthetic and cost considerations. Prerequisite: Mechanical Engineering 335.

336. Materials and Methods of Architectural Construction I Credit 2(2-0)

Lecture. The manufacture and use of materials for wood frame and masonry construction. The study of construction methods and the influence of building codes. Prerequisite: Architectural Engineering 222.

337. Materials and Methods of Architectural Construction II Credit 2(2-0)

Lecture. The manufacture and use of materials for fire resistive construction. The study of construction methods and the influence of building codes. Prerequisite: Architectural Engineering 336.

448. Architectural Acoustics

Credit 3(2-1)

Lecture-Laboratory Course. Acoustical design and noise control in buildings. Study of sound absorption and sound transmission characteristics of building materials, surface configurations, and construction details. Prerequisites: Architectural Engineering 337, Physics 222.

449. Electrical Equipment of Buildings

Credit 3(3-0)

Lecture-problems course. Characteristics of electrical distribution systems, computation of electrical power requirements for buildings, theory and design

of wiring systems and lighting systems for buildings, and the selection of electrical equipment for buildings. Prerequisites: Physics 222, Architectural Engineering 223 and Electrical Engineering 441.

451. Architectural Design III

Credit 4(0-8)

Laboratory-lecture course presenting a series of problems for study of space analysis, space organization, form and function. Integration of design and construction methods and the organization of structural components. Prerequisite: Architectural Engineering 332.

452. Architectural Design IV

Credit 4(0-8)

Laboratory-lecture course presenting a series of problems in the design, analysis, and organization of buildings. Economic and social considerations are given to problems. Group planning, mass and orientation are studied for more complex building requirements. More detailed study and presentation is required to emphasize the complete architectural complex. Prerequisite: Architectural Engineering 451.

453. History of Architecture III

Credit 3(3-0)

Illustrated lecture. An analytical study of modern and contemporary architecture. Prerequisite: Architectural Engineering 444.

454. Reinforced Concrete Theory I

Credit 3(3-0)

Lecture-problems course. Reinforced concrete theory as applied to building structures. Theory of design for beams, slabs, and columns. Allowable stress and ultimate strength concepts. Bending of reinforced concrete columns. Prerequisites: Architectural Engineering 335 and Mechanical Engineering 336.

455. Reinforced Concrete Theory II

Credit 2(2-0)

Lecture problems course. Footings and retaining walls, theory of design for continuous reinforced concrete beams and slabs. Prerequisite: Architectural Engineering 454.

456. Theory of Structures I

Credit 3(3-0)

Lecture problems course. Reaction, shears, and moments, truss analysis. Influence lines and criteria for maximum moving load conditions. Introduction to space frames. Portal and cantilever approximate methods of analysis. Moment area theorems and deflections. Prerequisites: Architectural Engineering 335 and Mechanical Engineering 336.

457. Theory of Structures II

Credit 3(3-0)

Lecture problems course. Elastic weights and the conjugate beam. Virtual work solutions, Maxwell's Law and Williot-Mohr methods of analysis. Analysis of statically indeterminate problems by consistent deformation, fixed points, Castigliano's theorems, three moment equations, slope deflection, moment distribution. Computer solutions. Prerequisite: Architectural Engineering 456.

458. Production Drawings

Credit 3(0-6)

Laboratory Course: Design development drawings and architectural working drawings. Production of small scale general drawings including plans and elevations, large scale detail drawings and schedules. Prerequisites: Architectural Engineering 332 and 337.

459. Photo-Elastic Stress Analysis

Credit 2(1-2)

Lecture and Laboratory: Stress-strain relationships, light polarization, isoclinics, isostatics and principles of strain measurements. Use of photo-elastic reflective coatings and models of photo-elastic materials. Prerequisite: Mechanical Engineering 456.

561. Structures I

Credit 4(2-2)

Lecture and Laboratory: Theory and design of structural components: tension members, compression members and beams. Connections—Design of statically determinate systems. Prerequisite: Architectural Engineering 456.

562. Structures II

Credit 3(2-2)

Lecture and Laboratory: Multi-story frames: gravity and lateral loads. Design of building frames. Limit design. Three hinged arches. Composite construction. Prerequisite: Architectural Engineering 561.

563. Statically Indeterminate Structures

Credit 3(3-0)

Lecture-problems: Analysis of continuous beams and rigid frames. Approximate methods and special techniques: slope deflection, moment distribution, column analogy. Introduction to design of statically indeterminate systems. Prerequisite: Architectural Engineering 455, 457.

564. Foundation and Soil Structures

Credit 3(1-4)

Lecture and Laboratory: Origin and composition of soils, soil structure. Flow of water through soils, capillary and osmotic phenomena. Soil behavior under stress; compressibility, shear strength. Elements of mechanics of soil masses with application to problems of bearing capacity of foundations, earth pressure on retaining walls, and stability of slopes. Prerequisite: Upper Junior Classification.

565. Professional Practice

Credit 2(2-0)

Lecture. Procedures of professional practice, registration, ethics, professional services, contracts, bonds, liens, insurance, bidding, procedures, supervision, and administration of construction operations, office management. Prerequisite: Upper Junior Classification. For majors in architectural engineering only.

566. City Planning and Urban Design I

Credit 4(2-4)

Lecture and Laboratory Course: History of city planning and urban design; general problems of city planning and urban design-architectural space compo-

sition. Theory of space composition. Regional and urban planning; scale of the plan for region and city. Transportation in the city; the city as a human unit. Greenery in the city. Location of the residential areas, industry, business and commerce, etc. Location criteria. Design of the neighborhood unit. Prerequisite: Juniors enrolled in the program of the Transportation Institute and Architectural Engineering majors of junior classification. Open to practicing design professionals.

567. City Planning and Urban Design II

Credit 5(2-6)

Lecture and Laboratory Course: New outlooks on the city and the city planning process. High-rise and flat cities, low-rise housing in the city. Space compositional factors. Places of public interest. Places of aesthetical attraction in the city. Transportation and extension of the city. Types of housing such as row housing, twin housing, etc. High-rise city (high-flat housing) density of population, and scale of the city. Plans for high-rise housing, low income housing and industrialized technology in low income housing. Design of the city plan. Cooperation with the transportation engineer, economist, sociologist, etc. Prerequisite: Architectural Engineering 566 and 332. Open to practicing design professionals.

568. Environmental Control Systems for Buildings II

Credit 3(0-6)

Laboratory Course: Development of complete environmental systems for buildings. Includes mechanical and electrical systems, as they are integrated with architectural design, structural design, and building construction. Prerequisites: Mechanical Engineering 416, Architectural Engineering 223, and Architectural Engineering 449.

569. Experimental Structural Analysis

Credit 3(1-4)

Lecture and Laboratory: Photo-elastic stress analysis and mini-measurement techniques will be used to analyze structural components. Prerequisite: Architectural Engineering 563.

COURSES IN ART

Undergraduate

100. Basic Drawing and Composition (Formerly Art 3200)

Credit 3(0-6)

A study of the fundamental principles of drawing as a mode of visual expression. Selected problems involving basic consideration of line, form, space and composition are presented for analysis and laboratory practice.

101. Lettering and Poster Design (Formerly Art 3201)

Credit 3(0-6)

A comprehensive study of the art of lettering. Projects involving the principles of layout, poster construction, and general advertising.

220. Graphic Presentation I (Formerly 3220)

Credit 2(0-4)

Exercises in various sketching techniques and media, including work with pencil, charcoal, crayon, and ink. Individual instruction is given using forms in nature and still life for art and architectural presentation. Prerequisite: Sophomore classification.

221. Graphic Presentation II (Formerly 3221)

Credit 2(0-4)

The theory of color mixture. Individual instruction in the techniques of watercolor painting for architectural presentation. Studies from nature and still-life. Prerequisite: Art 220.

222. Watercolor (Formerly Art 3222)

Credit 3(0-6)

Experimental exploration of all aqueous media: watercolor, casein, gouache; their possibilities and limitations.

224. Art Appreciation (Formerly Art 3224)

Credit 2(2-0)

An introduction to the study of art. Basic qualities of various forms of artistic expression are explained. Emphasis is placed on the application of art principles in everyday life.

225. An Introduction to the History of Art (Formerly Art 3225)

Credit 2(2-0)

A general introduction to the history of art, beginning with an examination of ancient art in terms of their extant monuments and culminating with the analysis and comparison of representative works of today.

226. Design I (Formerly Art 3226)

Credit 3(0-6)

An introduction to visual design based upon an analysis of the aims, elements, principles, sources of design and their application in a variety of media.

227. Design II (Formerly Art 3227)

Credit 3(0-6)

A continuation of Art 226 with consideration given to three dimensional as well as two dimensional problems. Students are encouraged in the experimental use of materials and are required to find individual and complete solutions to problems through various stages of research, planning, and presentation. Emphasis is placed on technical perfection and the development of professional attitudes.

228. Color Theory (Formerly 3228)

Credit 3(0-6)

Problems directed toward understanding of color through creative experiment and application of color in visual organization. Use of slides, filmstrips, and trips.

229. Anatomy and Figure Drawing (Formerly Art 3229)

Credit 3(0-6)

A study of the human figure with emphasis on anatomy, body structure and proportions, draped figures at rest and in action. Special emphasis is given to detailed studies, composition, and stylization.

400. Renaissance Art (Formerly Art 3240)

Credit 2(2-0)

The study of the Renaissance in Italy and in major regions of northern and western Europe from 1300 to 1600.

401 Ceramics

Credit 3(0-6)

(Formerly Art 3241)

Introduction to sculptural form with the use of clay modeling, basic plaster techniques, wood, and metal in relation to the production of sculpture. ing, decorating, glazing, and firing. Supplementary reading is required:

402. Basic Sculpture (Formerly 3242)

Credit 3(0-6)

Introduction to sculptural form with the use of clay modeling, basic plaster techniques, wood, and metal in relatin to the production of sculpture.

403. Jewelry and Metalwork (Formerly 3243)

Credit 3(0-6)

The design and technical essentials of jewelry making and metalwork. Prerequisites: Art 226, 227.

405. Materials and Techniques (Formerly 3245)

Credit 3(0-6)

A study of the materials of the artist; supports, grounds, vehicles, binders, and protective covering. Exploration of the possibilities of various techniques of picture construction as a point of departure for individual expression.

406. Painting Techniques (Formerly 3246)

Credit 3(0-6)

A continuation of 405 with further work in projects that explore the esthetic opportunities and problems implicit in the use of varying media. Work in tempera, gouache, casein, polymers and lacquers.

450. Advertising Design I (Formerly 3250)

Credit 3(0-6)

The study of basic tools of advertising design. Students are introduced to lettering techniques, layout problems, and reproduction processes for advertising, illustrations, posters, and television.

451. Advertising Design II (Formerly 3251)

Credit 3(0-6)

Preparation and rendering of art work for reproduction from rough idea layouts to finished illustration. Creative and technical class work is augmented by visits to commercial studios and printing companies. Prerequisite: Art 450.

452. Commercial Art (Formerly Art 3252)

Credit 3(0-6)

Illustration techniques. Different materials and renderings employed in advertising illustration, such as airbrush, colored inks, scratch board, etc. Attention is given to techniques of printing in as far as they affect graphic design.

453. Typography ((Formerly 3253)

Credit 3(0-6)

The study of typography in relation to lettering, advertising, and design. Prerequisites: Art 101 and 450.

454. General Crafts (Formerly Art 3254)

Credit 3(0-6)

Introduction to craft processes, weaving, metalwork, leather, etc.

455. Fabric Design and Basic Weaving (Formerly 3255)

Credit 3(0-6)

Basic principles of design as related to textiles and other flat surface decoration. The warping, threading, and weaving on small looms. History of fabric design and weaving. Prerequisites: Art 226, 227.

456. Fabric Painting and Weaving

Credit 3(0-6)

The emphasis is on printing techniques and designers' tools to achieve effective results and on the use of the large looms for creating interesting fabrics. Study of contemporary trends in weaving. Prerequisite: Art 226, 227, 455.

457. Stage Design and Marionette Production I. (Formerly 3257)

Credit 3(0-6)

Problems in scene design and stage setting with experiments in stage lighting. Attention is given to the designing and construction of marionettes for simple plays. Field trips and attendance at plays are required.

458. Stage Design and Marionette Production II

Credit 3(0-6)

A continuation of 457.

459. Baroque and Roccoco Art (Formerly Art 3259)

Credit 2(2-0)

The study of art in Europe from 1600 to 1800.

520. Modern Art

Credit 2(2-0)

(Formerly Art 3260)

European and American Art from about 1875 to the present.

524. Introduction to Graphic Arts (Formerly Art 3264)

Credit 3(0-6)

(Formerly The 9201)

Introduction to printmaking processes. Production of prints in varied media: lineoleum, woodcuts, drypoint etchings, serigrahs, and lithographs.

525. Lithography and Serigraphy (Formerly 3265)

Credit 3(0-6)

Exploration of the techniques of lithography and serigraphy as a means of contemporary artistic expression. Emphasis of medium determined by individual interest.

526. Senior Project (Formerly 3266)

Credit 3(0-6)

Students who have given evidence of their ability to do serious individual work on a professional level may plan and carry out a project of their own choosing, subject to approval and supervision of a faculty member.

528. Painting I (Formerly Art 3268)

Credit 3(0-6)

Creative painting in various media with emphasis on a modern approach and handling of medium. Research and experience in contemporary trends: abstracts, non-objective, and abstract expressionism.

529. Painting II

Credit 3(0-6)

(Formerly Art 3269)

Development of the student as a professional artist; advance research and familiarization with contemporary trends, concepts, forms, and symbols. Emphasis on an original contemporary statement.

Advanced Undergraduate and Graduate

600. Public School Art (Formerly Art 3270)

Credit 3(3-0)

Study of materials, methods, and procedures in teaching art in public schools. Special emphasis is placed on selection and organization or materials, seasonal projects, lesson plan.

602. Seminar in Art History (Formerly Art 3272)

Credit 3(3-0)

Investigation in depth of the background influences which condition stylistic changes in art forms by analyzing and interpreting works of representative personalities.

603. Studio Techniques (Formerly Art 3273)

Credit 2(0-4)

Demonstrations that illustrate and emphasize the technical potentials of varied media. These techniques are analyzed and discussed as a point of departure for individual expression.

604. Ceramic Workshop (Formerly Art 3274)

Credit 2(0-2)

Advanced studio problems and projects in ceramics with emphasis on independent creative work. The student is given opportunity for original research and is encouraged to work toward the development of a personal style in the perfection of technique.

605. Printmaking (Formerly Art 3275)

Credit 2(0-4)

Investigation of traditional and experimental methods in printmaking. Advanced studio problems in woodcut etching, lithography, and serigraphy.

606. Sculpture (Formerly Art 3276)

Credit 2(0-4)

Further study of sculpture with an expansion of techniques. Individual problems for advanced students.

607. Project Seminar (Formerly Art 3277)

Credit 2(0-4)

Advanced specialized studies in creative painting, design, and sculpture. By means of discussion and suggestions, this seminar intends to solve various problems which might arise in each work. Prerequisite: Consent of the instructor.

608. Arts and Crafts (Formerly 3278)

Credit 2(0-4)

Creative experimentation with a variety of materials, tools, and processes: projects in wood, metal, jewelry making, wood and metal construction, fabric design, leather craft, pupper making, and paper sculpture.

COURSES IN BIOLOGY

Undergraduate

100. Biological Science**
(Formerly Biol. Sc. 1501)

Credit 4(3-2)

This is a general education course that stresses the objectives presented under the general education program of the School of Education and General Studies. It is structured to meet the needs of students who plan to teach (a) at the pre-school level, (b) at the elementary school level, (c) at the secondary level in a non-science mathematics area, and (d) in the area of music. In addition this course is designed for freshmen who plan to concentrate in the divisions of the Humanities or the Social Sciences.

400. Field Biology (Formerly Biol. 1540) Credit 3(1-4)

This course is designed to give a more detailed understanding of the ecological requirements of organisms, their distribution and their way of life. Emphasis is placed on the method of collecting, classification, and preserving samples of organisms, where and when to find them and the sources of pertinent information regarding them.

Courses in Bacteriology

Undergraduate

120. Microbiology (Formerly Bact. 1523) Credit 4(2-4)

A survey of the principles and techniques of microbiology and immunology with special emphasis on their application to nursing.

^{**} General Education course for majors.

121. General Microbiology (Formerly Gen. Bact. 1524)

Credit 4(2-4)

A general course designed to orient the student within the world of microscopic living things, including yeasts, molds, bacteria, rickettsiae, and viruses. Detailed study is given to bacteria as prototype of all microorganisms. Relationships among microorganisms and selected microorganisms (higher plants, animals, man) are emphasized. Prerequisites: Biology 160, 140; Chemistry 106-116 and 107-117.

420. Food Microbiology

Credit 4(2-4)

(Formerly Bact. 1543; Dairy Bact. 420)

A general course which considers some of the common organisms associated with normal, and abnormal fermentations of milk; the role of microorganisms in the production and decomposition of various dairy products is also considered. Prerequisite: Biology 121.

421. Soil Bacteriology (Formerly Bact. 1544)

Credit 4(2-4)

The role of microorganisms in soil fertility. Special emphasis is on the activity of the nitrogen-fixing bacteria and also those concerned in the decomposition of organic waste materials. Prerequisite: Biology 121.

COURSES IN BOTANY

Undergraduate

140. General Botany** (Formerly Bot. 1507)

Credit 4(2-4)

Plants as living organisms constituting an integrated part of man's environment. Emphasis is placed on cellular function, plant structure and function, evolutionary tendencies, and living processes.

430. Plant Taxonomy (Formerly Bot. 1527)

Credit 4(2-4)

Systematic botany, and taxonomic system, botanical nomenclature, and herbarium techniques are combined in this study of selected orders, families, and genera of seed plants. Prerequisite: Botany 140.

^{**} General Education course for majors.

432. Plant Physiology (Formerly Bot. 1528) Credit 4(2-4)

An elementary course designed to develop a clear understanding of the basic physiological process related to the structure, growth, and function of the seed plants. Prerequisite: Biology 140, Chemistry 106 and 107.

530. Plant Pathology (Formerly Bot. 1547) Credit 4(2-4)

Basic factors governing the development of plant diseases including host-parasite relationships, effect of environment on disease development and the nature of disease resistance. Prerequisite: Botany 140.

Advanced Undergraduate and Graduate

640. Plant Biology (Formerly Bot. 1572) Credit 3(2-2)

A presentation of fundamental botanical concepts to broaden the background of high school biology teachers. Bacteria, fungi, and other microscopic plants will be considered as well as certain higher forms of plants. The course will consist of lectures, laboratory projects, and field trips.

642. Special Problems in Botany (Formerly Bot. 1573)

Credit 3(2-2)

Open to advanced students in botany for investigation of specific problems. Prerequisite: Biology 140 or 640.

Course in General Science

600. General Science for Elementary Teachers (Formerly Gen. Sci. 1570) Credit 3(3-0)

This course will consider some of the fundamental principles of the life and physical sciences in an integrated manner in the light of present society needs.

Courses in Zoology

Undergraduate

160. General Zoology** (Formerly 2001. 1512)

Credit 4(2-4)

An introduction to the study of invertebrates and vetebrates with emphasis on cellular physiology and the morphology, and physiology of representative forms.

260. Comparative Evolution of the Vertebrates (Formerly Zool. 1531)

Credit 4(2-4)

A comparative study of chordate organ systems with rather detailed emphasis on the evolution and organogenesis of primitive chordates, dogfish shark and the cat. Prerequisite: Biology 160.

261. Sociobiology

Credit 3(3-0)

An introductory interdisciplinary course training with the social behavior with especial emphasis on the formation, maintenance, and disruption of social bonds. Prerequisite: An introductory course in Animal Biology.

460. Advanced Invertebrate Zoology (Formerly Zool. 1532)

Credit 4(2-4)

Comprehensive consideration of the morphology, function, phylogeny, classification and the life histories of representative forms of lower and higher invertebrate groups exclusive of insects. Prerequisite: Biology 160.

461. Human Anatomy and Physiology (Formerly Zool. 1533)

Credit 4(2-4)

A study of general structure and function of the human body. Not open to Biology majors.

465. Histology (Formerly Zool. 1551)

Credit 4(2-4)

The microscopic anatomy of cells, tissues and organs with special emphasis on histogenesis, histochemistry and histophysiology. Prerequisite: Biology 160.

466. Principles of Genetics (Formerly Zool. 1552)

Credit 3(2-2)

Chromosomal mechanisms and the molecular basis of heredity; concept of template surfaces and the replication and genetic organization of DNA. Gene action at the molecular level; gene structure and function; the genetic code; regulation of protein synthesis; cell differentiation and development. Prerequisite: Biology 160.

467. General Entomology (Formerly Zool. 1553)

Credit 3(1-4)

Elementary structure, description, and habits of the principal orders of insects. Laboratory work will consist of collecting, mounting, preserving, and classification of principal insect representatives. Recommended for general science and biological science majors. Prerequisite: Biology 160.

468. Economic Entomology (Formerly Zool. 1554)

Credit 3(2-2)

Elementary structure, life histories, classification, and control of insect pests and related arthropods. Recommended for students majoring in one of the agricultural sciences. Prerequisite: Biology 160.

469. Human Anatomy (Formerly Zool. 1556)

Credit 3(2-2)

Lectures, demonstrations and laboratory study emphasizing basic facts and principles of body structure. Not open to Biology majors.

560. Human Physiology (Formerly Zool. 1565)

Credit 3(2-3)

An introductory course with emphasis placed on basic principles and mechanisms of physiological functioning of body cells, tissues and systems. Required of majors in Physical Educaton. Not open to Biology majors. Prerequisite: Biology 469.

561. Veterbrate Embryology ((Formerly Zool. 1566))

Credit 4(2-4)

Study of the developmental stages of selected vertebrates. The materials are treated comparatively and consist of amphibian, bird, rodent, and references to other mammalian forms. Prerequisite: Biology 260.

562. Introductory Cell Physiology (Formerly Zool. 1567)

Credit 4(2-4)

A treatment at the molecular level of the fundamental processes in living cells. The biochemistry of cellular constituents, bioenergetics, intermediary metabolism, and the regulatory mechanisms of the cell will be discussed. Prerequisite: Chemistry 221.

568. Seminar in Biology (Formerly Zool. 1568)

Credit 1(1-0)

A seminar on selected topic and recent advances in the field of plant and animal biology. This course is required of all seniors.

569. Seminar in Biology (Formerly Zool. 1569)

Credit 1(1-0)

A continuation of Zoology 568.

Advanced Undergraduate and Graduate

660. Special Problems in Zoology (Formerly Zool. 1574)

Credit 3(2-2)

Open to students qualified to do research in Zoology.

661. Mammalian Biology (Formerly Zool. 1575) Credit 3(3-0)

Study of the evolutionary history, classification, adaptation and variation of representative mammals. Prerequisite: Biology 160.

662. Biology of Sex (Formerly Zool. 1576)

Credit 3(3-0)

Lectures on the origin and development of the germ cells and reproductive systems in selected animal forms. Prerequisites: Biology 140, 160, and 260.

663. Cytology (Formerly Zool. 1577) Credit 3(3-0)

Study of the cell with lectures and periodic student reports on modern advances in cellular biology. Prerequisites: Biology 140, 160 and 465.

664. Histo-Chemical Technique (Formerly Zool. 1578)

Credit 3(1-4)

Designed to develop skills in the preparation of cells, tissues and organs for microscopic observation and study. Prerequisite: Biology 160 and 260.

665. Nature Study (Formerly Zool. 1579) Credit 3(3-0)

A study of diversified organisms, their habits, life histories, defenses, sex relationships, periodic activities and economic values designed to acquaint the student with fundamental knowledge that should lead to fuller appreciation of nature.

666. Experimental Embryology (Formerly Zool. 1580)

Credit 3(1-4)

A comprehensive lecture-seminar course covering the more recent literature on experimental embryology and development physiology. Experimental studies treating with fish, amphibian, chick and rodent development are designed as laboratory projects. Prerequisite: Biology 561 or equivalent.

667. Animal Biology (Formerly Zool. 1581) Credit 3(2-2)

A lecture-laboratory course stressing fundamental concepts and principles of biology with the aim of strengthening the background of high school teachers. Emphasis is placed on the principles of animal origin structure, function, development, and ecological relationships.

668. Animal Behavior

Credit 3(3-0)

A study of the qualitative and quantitative difference between behavioral characteristics at different evolutionary levels, adaptiveness of differences in behavior and the development of behavior will be emphasized. Prerequisites: Biology 260, 466 and 561.

669. Recent Advances in Cell Biology

740. Essentials of Plant Anatomy

(Formerly Botany 1585)

Credit 3(3-0)

Credit (3(2-2)

A course designed to meet the needs of advanced undergraduate and graduate students desirous of the more recent trends concerning functions of organized cellular and sub-cellular systems. Current research as it relates to the molecular and fine structure basis of cell function, replication, and differentiation will be discussed. Prerequisites: Biology 466, 562, credit or concurrent registration in Chemistry 224.

Graduate Courses in Botany

(Tornierry Botany 1909)	
741. Applied Plant Ecology (Formerly Botany 1586)	Credit 3(2-2)
742. Physiology of Vascular Plants (Formerly Botany 1587)	Credit 3(2-2)

743. Developmental Plant Morphology (Formerly Botany 5586) Credit 3(2-2)

744. Plant Nutrition Credit 3(2-2) (Formerly Botany 5587)

Graduate Courses in Zoology

760. Projects in Biology	Credit 2(0-4)
(Formerly Zoology 1588)	

761. Se	minar in	Biology	Credit	1(1-0)
(Fe	ormerly Zo	oology 1589)		

762. Applied Invertebrate Zoology	Credit 3(2-2)
(Formerly Zoology 1590)	

763.	Fundamentals of Vertebrate Morphology (Formerly Zoology 1591)		Credit	3(2-2)
764.	Basic Protozoology (Formerly Zoology 1592)		Credit	3(2-2)
765.	Introductory Experimental Zoology (Formerly Zoology 1593)		Credit	3(2-2)
766.	Invertebrate Biology for Elementary and Secondary School Teachers (Formerly Zoology 1594)		Credit	3(3-0)
767.	Genetics and Inheritance for Secondary School Teachers (Formerly Zoology 1595)		Credit	3(2-2)
768.	Functional Invertebrate Zoology (Formerly Zoology 1596)		Credit	3(2-2)
769.	Cellular Physiology (Formerly Zoology 1598)		Credit	4(2-4)
860.	Parasitology (Formerly Zoology 5585)		Credit	3(2-2)
861.	Advanced Genetics (Formerly Zoology 5588)		Credit	3(2-2)
862.	Research in Botany (Formerly Zoology 5592) or	3	Credit	Hours
863.	Research in Zoology (Formerly Zoology 5593)	3	Credit	Hours
Graduate Courses in Biology				
700.	Environmental Biology (Formerly Zoology 1589)		Credit	3(2-2)
701.	Biological Seminar ((Formerly Zoology 1590)		Credit	1(1-0)

702. Biological Seminar (Formerly Zoology 1591)

Credit 1(1-0)

703. Experimental Methods in Biology (Formerly Zoology 1597)

Credit 3(1-4)

704. Seminar in Biology (Formerly Zoology 1599)

Credit 3(2-2)

COURSES IN BUSINESS ADMINISTRATION

Undergraduate

220. Business Environment
(Formerly Business Administration 204)

Credit 3(3-0)

The purpose of this course is to provide an understanding of the evolution of American business and the businessman, and an appreciation of the growing responsibilities facing both the company and its leaders. This course also covers entrepreneurship and the nature and problems of establishing a business enterprise. Ultimately students should develop a satisfying personal business philosophy.

361. Introduction to Data Processing (Formerly Business Administration 372)

Credit 3(3-0)

A business-oriented discussion of concepts, computer hardware, data representation, file design and problem solving techniques. The course will conclude by familiarizing students to a brief treatment of COBOL programming language. Prerequisite: Sophomore standing.

420. Human Behavior in Business (Formerly Business Administration 490) Credit 3(3-0)

Introduction of behavioral concepts of concern to management. Emphasis is placed upon the analysis of interpersonal relations, communication practices, and morale factors relative to the effect upon productivity, organizational effectiveness, and personal systems. Prerequisite: Junior standing.

422. Introduction to Management (Formerly Business Administration 322) Credit 3(3-0)

This course covers an analysis of the basic managerial processes at the administrative, staff, and operational levels of a firm. Attention is given to the role of organization theory as it applies to achieving managerial objectives through available tools for obtaining desired results. Prerequisite: Junior standing.

430. Marketing
(Formerly Business Administration 440)

Credit 3(3-0)

Marketing is a basic function in the firm and in the economy. Emphasis is placed on the relationship between marketing activities and the consumer. Includes both functional and institutional aspects of marketing. Prerequisite: Junior standing.

431. Marketing Communications (Formerly Business Administration 431—Advertising)

The purpose of this course is to acquaint students with the fundamentals of the marketing communications activities of the firm. All marketing mix variables are treated as marketing communications variables. Distinction is made between promotion and communications. Attention is also given to the usage of advertising communications appeals and marketing communications strategies in designing advertising and marketing communications programs. Prerequisite: Business Administration 430.

433. Retailing
(Formerly Business Administration 570)

Credit 3(3-0)

Emphasis is on retail store management. Attention is given to store location, layout, personnel, organization, buying, inventory, sales promotion, customer services and operating expenses. Prerequisite: Business Administration 430.

435. Salesmanship
(Formerly Business Administration 565)

Credit 3(3-0)

Treats the fundamentals of planning, acquiring resources, organizing and operating a sales organization. Prerequisite: Business Administration 430.

437. Consumer Behavior

Credit 3(3-0)

Develops the knowledge of the behavioral content of marketing in consumer, industrial, and international fields. Examines the applicable theory, research findings, and concepts that are provided by psychology, sociology, anthropology, and marketing. The course stresses the conceptual models of buyer behavior based upon sources of influence: individual, group, culture, environment. Prerequisite: Business Administration 430.

451. Business Law I

Credit 3(3-0)

Discusses the Anglo-American legal system, the American Court system, criminal law, tort law, contracts, property law, the law governing business organizations and government regulation of business. Emphasis is placed on the legal environment in which business and government operate. Prerequisite: Junior standing.

452. Business Law II

Credit 3(3-0)

Treats the law of sales of goods, commercial paper and negotiable instruments and secured transactions under the Uniform Commercial Code as well as bankruptcy and insurance, with emphasis on government regulation of those business transactions. Prerequisite: Business Administration 451.

453. Business Finance

Credit 3(3-0)

An introduction to the financial problems of business organizations, the finance function and its relationship to other decision-making areas in the firm, the concepts and techniques for planning and managing the acquisition and allocation of financial resources from the standpoints of internal management. Prerequisite: Accounting 222 and Junior standing.

454. Risk and Insurance

Credit 3(3-0)

(Formerly Principles of Insurance)

Introduction to risk management with emphasis on varied applications of insurance as a technique for treating uncertainty. Prerequisite: Junior standing.

455. Investments

Credit 3(3-0)

Analyzes the various types of corporate and public securities, examines the operation of securities markets. Prerequisite: Business Administration 453.

457. Real Estate

Credit 3(3-0)

Analyzes the fundamental laws of real property with special emphasis on the changing character of the urban economy; buildings and land use and their values. Prerequisite: Junior standing.

470. Urban Transportation Concepts

Credit 3(3-0)

An analysis of the role of transportation in the urban scene. Topics cover transportation needs of the poor, demand for the modes of transportation, and urban transportation planning methods. Prerequisite: Sophomore standing.

481. Management Science I

Credit 3(3-0)

An introduction to operations research. Basic concepts of management science including selected quantitative models of applicable to business administration, allocating problems including linear programming and its extensions, game theory, inventory theory, and network models. Prerequisite: Math 112 and Economics 305; Junior standing.

482. Production Management

Credit 3(3-0)

(Formerly Business Administration 480)

A survey of the major production and operations functions of organizations with various productive systems. Stresses the identification of major problem areas associated with these functions such as aggregate planning, scheduling, man-machine systems, inventory control, etc., and the development of concepts and decision processes for dealing with the problems. Emphasizes the application of modern quantitative techniques relevant to production management. Prerequisite: Business Administration 481 and Junior standing.

520. Business Policy

Credit 3(3-0)

An integrative course that focuses on strategic planning, policy formulation, corporate-wide decision making. The terminal performance objectives of this course involve analysis of a complex organization in order to develop the ability to: identify major problems and opportunities; to establish strategic objectives; and to recommend implementation plans and programs. Prerequisite: Senior standing.

522. Personnel Management (Formerly Business Administration 569)

Credit 3(3-0)

The student is provided with various skills and techniques which are currently employed in the practice of personnel management. The course covers developments in programs and activities pertaining to the management of human resources with emphasis on the role of management. Topics include management's responsibilities in dealing with people, the role of personnel management, recruitment and selection, performance appraisal, the exercise of authority, and others. Prerequisite: Advanced junior standing.

524. Management Simulation

Credit 3(3-0)

A seminar which focuses on simulating the operation of a complex business enterprise into a unified whole for analysis purposes. Emphasis on quantitative techniques utilized decision-making under uncertainty, market analysis and forcasting analysis, budgeting, interpersonal relationships, administration of the firm, goal-setting and policy formulation for the firm. Participants are divided into teams with key corporate duties being assigned and several teams compete against each other in an attempt to operate the firm on the optimum profitable basis. Prerequisite: Senior standing.

538. Marketing Research

Credit 3(3-0)

Types of research techniques used by business coordinated marketing activities with consumer demand. Emphasis is placed upon survey; observational and experimental techniques used in marketing. Prerequisite: Economics 310 and Business Administration 430.

539. Marketing Management

Credit 3(3-0)

A course to develop an understanding of marketing problems and to survey policies and procedures for the formation, execution and appraisal of marketing programs. Prerequisite: Business Administration 430.

550. Financial Management

Credit 3(3-0)

Stresses the corporate financial officer's responsibilities for determining optimal policies and procedures for capital budgeting under conditions of uncertainty, long-term financing, dividend distribution, mergers and acquisitions, and working capital management. A problem solving and/or case study approach is used, but not to the exclusion of probing theoretical questions. Prerequisite: Business Administration 453.

551. Financial Markets

Credit 3(3-0)

This course stresses the allocation, accumulation, and liquidity adjustment functions of financial markets. Financial tools such as flow-of funds data, portfolio theory, theories of financial structure of interest rates, and security pricing (valuation) techniques will be integrated into the course. Prerequisite: Business Admnistration 453 and Economics 415.

552. Commercial Bank Management

Credit 3(3-0)

Analyzes the operations of commercial banks, specifically, and other major financial institutions in general. Emphasis is placed on management decision-making processes. Through case analysis and problems, the student is introduced to cash, loan, deposit, investment, and management problems faced daily by managers of financial institutions. Prerequisite: Business Administration 453 and Economics 415.

555. Securities Analysis and Management

Credit 3(3-0)

This course treats in much greater depth the security analysis and portfolio management problems introduced in the basic investments course, Business Administration 455. The treatment should be especially valuable for students preparing for careers which will involve (1) using or producing securities analyses and/or (2) managing securities portfolios. Usually this means working with a financial institution, although the market for these skills is much broader. Prerequisite: Business Administration 455.

557. Cases in Business Finance

Credit 3(3-0)

A senior level course, designed for, but not restricted to, students who have a strong career interest in corporate financial management. The course utilizes cases and readings oriented toward short-term financial management problems. The student is placed continuously in the position of the decision-maker who must support his judgments by identifying each problem succinctly, marshalling appropriate data, analyzing the data, and ultimately arguing for one of the alternatives. Prerequisite: Business Administration 453 and Senior standing.

610. Interdisciplinary Seminar in Transportation (Formerly Business Administration 610)

Credit 3(3-0)

Geared to current developments in urban transportation; an interdisciplinary course on urbanism and transportation. Prerequisite: Advanced status in business adminstration, business education, accounting, economics, political science, sociology, or architectural engineering; Business Administration 470.

COURSES IN BUSINESS EDUCATION AND ADMINISTRATIVE SERVICES

Undergraduate

301. Beginning Typewriting (Formerly Office Administration 3301)

Credit 2(1-2)

Designated to develop a working knowledge of the use of the typewriter toward final mastery of keyboard reaches with drills, simple problems, and techniques of control. Requirement. 45 gwam.

302. Intermediate Typewriting (Formerly Typewriting II)

Credit 2(1-2)

Emphasis on technical typewriting, tabulation reports, and other advanced practical applications. Requirements: 60 gwam. Prerequisite: Business Education 301.

331. Gregg Shorthand I

Credit 3(2-1)

Study of theory as outlined in Gregg Shorthand Diamond Jubilee Series. Minimum Terminal Requirement: 70 wam on practiced matter. Prerequisite: Business Education 302.

332. Gregg Shorthand II

Credit 3(2-1)

(Formerly Office Administration 3332)

Emphasis is placed on reinforcing shorthand theory as outlined in Gregg Shorthand Diamond Jubilee Series, speed building, and production of mailable letters. Minimum Terminal Requirement: 80 warm on new-matter dictation. Prerequisite: Business Education 302 and Business Education 331.

334. Business Machines (Formerly Office Administration 3334)

Credit 2(1-2)

A course to develop concepts and skill in the use of modern office equipment. Prerequisite: Business Education 302.

360. Business Communications

Credit 3(3-0)

(Formerly Business Administration 360)

The study of communication theory and its applications to business. Emphasis also placed on composing the basic forms of business communication, including correspondence and reports. Prerequisite: English 101. Sophomore standing.

379. Personal Finance

Credit 3(3-0)

(Formerly Business Administration 3379 and Business Education 579)

Treats the problems faced by individuals in managing personal incomes and

expenditures. Emphasis is also placed upon credit. budgeting, borrowing, saving, and insurance. Prerequisite: Sophomore standing.

447. Transcription

Credit 3(2-1)

(Formerly Office Administration 3347)

Designed to review techniques and coordinate the skills of typewriting, shorthand, and English and promote desirable habits of performance. Intensive development of secretarial skill through timed dictation. Requirement: The production of mailable transcripts. Prerequisite: Business Education 331, 332.

568. Office Organization and Management (Formerly Business Administration 3368)

Credit 3(3-0)

Treats principles and concepts of the scientific office management and the responsibility of office services. Prerequisite: BA 361 and Senior Standing.

573. Executory Administration (Formerly Secretarial Procedures)

Credit 3(2-1)

A study of the qualifications, duties, and responsibilities of the secretary in the modern business office. Prerequisite: Business Education 301, 302, 331 and 332.

574. Coordinated Business Experience (Formerly Secretarial Internship)

Credit 1(0-1)

A program of observation and field work in selected business firms designed to contribute materially to the total development of the student's educational experiences. Prerequisite: Consultation with instructor and Junior Standing.

575-578. Methods of Teaching the Business Subjects Credit 4(4-0) (Comprehensive)

Analysis and evaluation of objectives, materials, and methods of teaching typewriting, shorthand, transcription, related office skills, and the basic business subjects. Provisions are made for observation and participation in demonstrative teaching. Prerequisite: Education 300, 301, 400; Psychology 320; BE 302, 334, 447.

575-577. Methods of Teaching the Business Subjects Credit 3(3-0) (Basic)

(Formerly Business Education 3377)

Selection, organization, and evaluation of supplementary teaching materials and analysis of techniques in teaching typewriting, bookkeeping, general business, business law, business structure, and elementary economics. Construction of teaching units, enrichment materials, and lesson plans for effective teaching on the secondary level. Prerequisite: Education 300-301, 400; Psychology 320; BE 302, 334.

581. Coordinating Techniques and Job Analysis in Cooperative Educational Programs

Credit 3(3-0)

A study of the role and responsibilities of the coordinator of occupational educational systems. Surveys the organizations of the office education programs; the course content of the related class, supervision, on-the-job trainees, the establishment of working relationships among the school, business, and home; examines pertinent research; emphasizes procedures in job analyses. Prerequisite: Business Education 575-578, Senior Standing and Consultation with advisor.

664. Occupational Exploration for Middle Grades

Credit 3(3-0)

Designed for persons who teach or plan to teach middle grades occupational exploration programs. Emphasis is placed on occupational exploration in the curriculum, sources and uses of occupational information, approaches to middle grades teaching, and philosophy and concepts of occupational education.

665. Occupational Exploration in the Middle Grades— Education and Office Occupations

Credit 3(3-0)

Emphasis is placed on curriculum, methods and techniques of teaching and resources and facilities for teaching in the business and office occupations cluster including business and office, distribution and marketing, and communication and media.

COURSES IN CHEMISTRY

099. Introductory Chemistry

Credit 3(3-0)

Basic methods and concepts in chemistry with emphasis on solving chemistry problems. Recommended first course in chemistry for students having little or no background in high school chemistry. May be used as preparation for Chemistry 101, 104, or 106.

†*100. Physical Science (Formerly Phy. Sc. 1601)

Credit 3(3-0)

A one semester introductory course designed to make clear the nature of science as an enterprise and illustrate by numerous examples how science really proceeds. Learning experiences are constructed so that they closely approximate real life situations where one has to search for clues and insights from a variety of sources.

This course is not open to students who have received credit for Chemistry 101, 102, 104, 105, 106 or 107.

^{*} Students are required to purchase supplemental materials for this course.

[†] General Education course

†*101. General Chemistry I (Formerly Chem. 1611)

Credit 3(3-0)

Introduction to the study of chemistry, atomic structure and periodicity, chemical bonding, states of matter and phase transitions, solutions, and electrolytes. This course is designed for majors in engineering and other sciences. Chemistry majors may register for this course with departmental approval. Prerequisites: 2 units of high school algebra or equivalent and 1 unit of high school chemistry or Chemistry 099.

†*102. General Chemistry II (Formerly Chem. 1612)

Credit 3(3-0)

A continuation of general chemistry including an introduction to qualitative inorganic analysis. Prerequisite: Chemistry 101.

†*104. General Chemistry IV (Formerly Chem. 1615)

Credit 3(3-0)

Introduction to fundamental techniques and concepts in chemistry, including writing and interpretation of symbols, formulas, equations, atomic structure, composition and reactions of inorganic compounds. This course is not open to majors in chemistry, physics, biology, mathematics and engineering.

†*105. General Chemistry V (Formerly Chem. 1616)

Credit 3(3-0)

A study of elementary organic chemistry and the chemical changes which take place during life processes. Prerequisite: Chemistry 104 or equivalent.

†*106. General Chemistry VI (Formerly Chem. 1618)

Credit 3(3-0)

A course which emphasizes basic principles and important theoretical concepts of chemistry. Topics will include atomic structure, electronic configuration, the wave mechanical model of the atom, chemical bonding, states of matter, chemical equilibria, systems of acids and bases, and electrochemistry. Prerequisites: 2 units of high school algebra or equivalent and 1 unit of high school chemistry or Chemistry 099.

†*107. General Chemistry VII (Formerly Chem. 1619)

Credit 3(3-0)

A continuation of Chemistry 106. Includes chemistry of important metals and nonmetals and a rigorous treatment of qualitative inorganic analysis.

^{*} Students are required to purchase supplemental material for this course.

[†] General Education courses

108. Chemistry Orientation (Formerly Chem. 1617)

Credit 1(1-0)

A series of lectures and discussions on the nature and requirements of the chemical profession; the application of chemistry to modern living, and other selected topics.

110. Physical Science Laboratory

Credit 1(0-2)

A laboratory course designed to bring students into working contact with the essential aspects of scientific experiences. It is in this course that the student develops concrete ideas about the operational meaning of the scientific method and problem solving. Corequisite: Physical Science 100.

This course is not open to students who have received credit for Chemistry

111, 112, 114, 115, 116, or 117.

†*111. General Chemistry Laboratory

Credit 1(0-3)

An introduction to quantitative studies of substances and chemical reactions. Emphasis is also placed on the development of manipulative skills. Corequisite: Chemistry 101.

†*112. General Chemistry II Laboratory

Credit 1(0-3)

Continuation of Chemistry 111 with an introduction to qualitative analysis. Corequisite: Chemistry 102. Prerequisite: Chemistry 111.

†*114. General Chemistry IV Laboratory

Credit 1(0-3)

A study of inorganic reaction and substances and their relation to life processes. Corequisite: Chemistry 104.

†115. General Chemistry VI Laboratory

Credit 1(0-3)

A study of organic reactions and substances and their relation to life processes. Corequisite: Chemistry 105. Prerequisite: Chemistry 114.

†*116. General Chemistry VI Laboratory.

Credit 2(0-4)

A course which emphasizes quantitative studies of chemical reactions such as acid-base studies, redox reactions, and equilibrium reactions. Emphasis is also placed on the development of manipulative skills in the laboratory. Corequisite: Chemistry 106.

†*117. General Chemistry VII Laboratory

Credit 2(0-4)

A continuation of Chemistry 116 with an introduction to qualitative analysis. Corequisite: Chemistry 107. Prerequisite: Chemistry 116.

^{*} Students are required to purchase supplemental material for this course.

[†] General Education courses

210. Cooperative Experience I

Credit 2(2-0)

A supervised learning experience in a specified private or governmental chemical facility. The student's performance will be evaluated by reports from the supervisor of the experience and the departmental staff. The student must present a seminar regarding the experience upon return to the University.

†*221. Organic Chemistry I

Credit 3(3-0)

A study of the hydrocarbons (aliphatic and aromatic) and introduction to their derivatives. Prerequisite: Chemistry 102, 105, or 107.

*222. Organic Chemistry II (Formerly Chem. 1622)

Credit 3(3-0)

Continuation of the study of derivatives of hydrocarbons and more complex compounds. Prerequisite: Chemistry 221.

*223. Organic Chemistry I Laboratory

Credit 2(0-4)

This laboratory course emphasizes the study of physical and chemical properties of aliphatic and aromatic compounds. Modern instrumentation such as gas and column chromatography, infrared and ultraviolet analyses are used. Corequisite: Chemistry 221.

*224. Organic Chemistry II Laboratory

Credit 2(0-6)

A continuation of Chemistry 223. However, more emphasis is placed on syntheses and qualitative analysis of organic compounds. Corequisite: Chemistry 222. Prerequisite: Chemistry 223.

231. Quantitative Analysis I (Formerly Chem. 331)

Credit 3(3-0)

Titrimetric and gravimetric analyses including theory and calculations associated with acid-base equilibria, oxidation reduction, nucleation, and precipitation-complexation processes. Prerequisite: Chemistry 102 or 107. Corequisite: Mathematics 116.

*232. Quantiative Analysis I Laboratory

Credit 2(0-4)

This laboratory course emphasizes the basic principles of chemical separations. Laboratory studies of gravimetric and titrimetric analyses are also encountered. Prerequisite: Chemistry 117. Corequisite: Chemistry 231.

251. Elementary Biochemistry (Formerly Chem. 1624)

Credit 2(2-0)

A study of fundamental cellular constituents. Emphasis is placed on physiological applications and analyses. Prerequisites: Chemistry 105 or 222. This course is open to non-chemistry majors only.

^{*} Students are required to purchase supplemental materials for this course.

[†] General Education courses

*252. Elementary Biochemistry Laboratory

Credit 1(0-3)

Elementary biochemical reactions are studied with emphasis placed on applications to biology, home economics and nursing. Prerequisite: Chemistry 115 or 224. Corequisite: Chemistry 251.

301. Current Trends in Chemistry (Formerly Chem. 1641)

Credit 2(2-0)

A series of lectures and discussions on special problems in chemistry and of the chemical profession not covered in formal courses.

310. Cooperative Experience II

Credit 3(3-0)

A supervised learning experience in a specified private or governmental chemical facility. The student's performance will be evaluated by reports from the supervisor of the experience and the departmental staff. The student must present a seminar regarding the experience upon return to the University.

410. Cooperative Experience III

Credit 4(4-0)

A supervised learning experience in a specified private or governmental chemical facility. The student's performance will be evaluated by reports from the supervisor of the experience and the departmental staff. The student must present a seminar regarding the experience upon return to the University.

431. Quantitative Analysis II (Formerly Chem. 1662)

Credit 2(2-0)

A study of the theory and the operational features of some of the more important instruments that are currently being used as analytical tools such as ultraviolet, visible-light, and infrared spectrophotometers, electroanalytical instruments, thermometric titrators, fluorimeters, etc. Prerequisite: Chemistry 441. Corequisite: Chemistry 442.

*432. Quantitative Analysis II Laboratory

Credit 2(0-6)

This laboratory course features the utilization of modern instruments such as ultraviolet, visible and infrared spectrophotometers. The student will also utilize electroanalytical instruments and thermometric titrators. Corequisite: Chemistry 431.

441. Physical Chemistry I (Formerly Chem. 1663)

Credit 3(3-0)

A study of the fundamental laws governing matter in the gaseous state, and the laws of thermodynamics and their applications to chemistry; includes an introduction to statistical thermodynamics. Prerequisite: Math. 117, Physics 222, and Chemistry 231.

^{*} Students are required to purchase supplemental materials for this course.

442. Physical Chemistry II (Formerly Chem. 1664)

Credit 3(3-0)

A continuation of Chemistry 441. Studies of solid and liquid states, solutions, phase equilibria, chemical kinetics, and electrochemistry. Prerequisite: Chemistry 441.

*443. Physical Chemistry I Laboratory

Credit 1(0-3)

Thermodynamic and kinetic studies are emphasized in this course. Corequisite: Chemistry 441.

*444. Physical Chemistry II Laboratory

Credit 1(0-3)

A continuation of Chemistry 443. Corequisite: Chemistry 442.

503. Chemical Research (Formerly 403)

Credit 4(0-10)

Makes use of the laboratory and library facilities in studying minor problems of research. Prerequisite: Advanced standing and permission of the Department.

504. Independent Study (Formerly 404)

Credit 4(0-10)

Independent study or research in a particular area of chemistry. Prerequisite: Permission of the department and advanced standing.

511. Inorganic Chemistry

Credit 3(3-0)

Introductory survey of structure and bonding in inorganic compounds; coordination compounds of the transition metals; donor-acceptor interactions; bonding theories. Prerequisite: Chem. 441; Corequisite: Chem. 442.

545. Physical Chemistry III (Formerly 502)

Credit 3(3-0)

A study of quantum chemistry and its application to studies of atomic and molecular structure. Prerequisite: Chemistry 442.

Advanced Undergraduate and Graduate

610. Inorganic Synthesis. (Formerly 1670)

Credit 2(1-3)

Discussion of theoretical principles of synthesis and development of manipulative skills in the synthesis of inorganic substances. Prerequisites: One year of organic chemistry; one semester of quantitative analysis.

^{*} Students are required to purchase supplemental materials for the course.

611. Advanced Inorganic Chemistry (Formerly 1671)

Credit 4(4-0)

A course in the theoretical approach to the systematization of inorganic chemistry. Prerequisite: Chemistry 442.

621. Intermediate Organic Chemistry (Formerly 501)

Credit 3(3-0)

An in depth examination of various organic mechanisms, reactions, structures, and kinetics. Prerequisite: Chemistry 222.

*624. Qualitative Organic Chemistry (Formerly 1776)

Credit 5(3-6)

A course in the systematic identification of organic compounds. Prerequisite: One year of Organic Chemistry.

631. Electroanalytical Chemistry (Formerly 1781)

Credit 3(3-0)

A study of the theory and practice of polarography, chronopotentiometry, potential sweepe chronoampereometry and electrodeposition. The theory of diffusion and electrode kinetics will also be discussed along with the factors which influence rate processes, the double layer, adsorption and catalytic reactions. Prerequisite: Chemistry 431 or equivalent.

641. Radiochemistry (Formerly 1782)

Credit 3(3-0)

A study of the fundamental concepts, processes, and applications of nuclear chemistry, including natural and artificial radioactivity, sources, and chemistry of the radioelements. Open to advanced majors and others with sufficient background in chemistry and physics. Prerequisites: Chemistry 442 or Physics 406.

642. Radioisotope Techniques and Applications (Formerly 1783)

Credit 2(1-3)

The techniques of measuring and handling radioisotopes and their use in chemistry, biology, and other fields. Open to majors and non-majors. Prerequisite: Chemistry 102 or 105 or 107.

643. Introduction to Quantum Mechanics. (Formerly 1784)

Credit 4(4-0)

Non-relativistic wave mechanics and its application to simple systems by means of the operator formulation. Prerequisite: Chemistry 442 and Physics 222. Corequisite: Mathematics 300.

^{*} Students are required to purchase supplemental materials for the course.

651. General Biochemistry (Formerly 1780) Credit 5(3-6)

A study of modern biochemistry. The course emphasizes chemical kinetics and enegetics associated with biological reactions and includes a study of carbohydrates, lipids, proteins, vitamins, nucleic acids, hormones, photosynthesis, and respiration. Prerequisite: Chemistry 431 and 442.

Graduate Courses

These courses are open to graduate students only. See the bulletin of the Graduate School for course descriptions.

701. Seminar Credit 1(1-0) (Formerly Chem. 1098)

702. Chemical Research (Formerly Chem. 1085, 1086 & 1087)

711. Structural Inorganic Chemistry (Formerly Chem. 1685)

715. Special Problems in Inorganic Chemistry Credit 2-5 (0-4 to 10) (Formerly Chem. 1088 & 1089)

716. Selected Topics in Inorganic Chemistry (Formerly Chem. 1686)

721. Elements of Organic Chemistry Credit 3(2-3) (Formerly Chem. 1690)

722. Advanced Organic Chemistry Credit 4(4-0) (Formerly Chem. 1691)

723. Organic Reactions Credit 2(2-0) (Formerly Chem. 1692)

725. Special Problems in Organic Chemistry (Formerly Chem. 1090 & 1091)

726. Selected Topics in Organic Chemistry Credit 2(2-0) (Formerly Chem. 1693)

727. Organic Preparations (Formerly Chem., 1694)	Credit 1-3(0-2 to 6)
731. Modern Analytical Chemistry (Formerly Chem. 1787)	Credit 3(2-3)
732. Advanced Analytical Chemistry (Formerly Chem. 1788)	Credit 4(4-0)
735. Special Problems in Analytical Chemistry (Formerly Chem. 1092 & 1093)	Credit 2-5(0-4 to 10)
736. Selected Topics in Analytical Chemistry (Formerly Chem. 1786)	Credit 2(2-0)
741. Principles of Physical Chemistry I (Formerly Chem. 1789)	Credit 4(3-3)
742. Principles of Physical Chemistry II (Formerly Chem. 1790)	Credit 4(3-3)
743. Chemical Thermodynamics (Formerly Chem. 1791)	Credit 4(4-0)
744. Chemical Spectroscopy (Formerly Chem. 1792)	Credit 3(2-3)
745. Special Problems in Physical Chemistry (Formerly Chem. 1094 & 1095)	Credit 2-5(0-4 to 10)
746. Selected Topics in Physical Chemistry (Formerly Chem. 1795)	Credit 2(2-0)
748. Colloid Chemistry (Formerly Chem. 1794)	Credit 2(2-0)
749. Chemical Kinetics (Formerly Chem. 1793)	Credit 4(4-0)

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755. Special Problems in Biochemistry (Formerly Chem. 1096 & 1097)	Credit 2-5(0-4 to 10)
756. Selected Topics in Biochemistry (Formerly Chem. 1695)	Credit 2(2-0)
763. Selected Topics in Chemistry Instruction I	Credit 6(6-0)
764. Selected Topics in Chemistry Instruction II	Credit 6(6-0)
765. Special Problems in Chemistry Instruction I	Credit 3(3-0)
766. Special Problems in Chemistry Instruction II	Credit 3(3-0)
767. Special Problems in Chemistry Instruction III	Credit 3(3-0)
768. Special Problems in Chemistry Instruction IV	Credit 3(3-0)

Course Descriptions

COURSES IN ECONOMICS

Undergraduate

300. Principles of Economics (Micro)

799. Thesis Research

Credit 3(3-0)

Credit 3

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An introductory approach to the principles of economics as they relate to individual segments of the society. Emphasis will be placed on diminishing returns, supply, demand and market structure.

301. Principles of Economics (Macro)

Credit 3(3-0)

An introduction to the meaning and scope of economics, economics terminology, and the basic principles as they apply to the whole economy.

305. Elementary Statistics

Credit 3(2-2)

An introduction to descriptive statistics including data presentation, measures of central tendency and dispersion; probability distributions; sampling distributions; and estimation. Prerequisite: Math 111.

310. Advanced Statistics

Credit 3(2-2)

Introduction to classical hypothesis testing; decision theory; regression and correlation; and index numbers. Prerequisite: Econ. 305.

401. Public Finance

Credit 3(3-0)

Analysis is made of the way federal, state, and local governments obtain and spend their revenues. Tax theories, incidence and impact are covered. Factors influencing governmental fiscal policies.

405. History of Economic Thought

Credit 3(3-0)

A survey of the history of economic thought from the Middle Ages to John M. Keynes. The course aims to show how, and under what conditions the more important laws and theories have become a part of the body of modern economics.

410. Intermediate Micro Economic Theory

Credit 3(3-0)

Theoretical analysis of consumer demand; production and costs; optimum output and pricing behavior under various market conditions; allocation of factors of production and distribution of income; general equilibrium and welfare economics. Prerequisite: Econ. 300 and junior standing.

412. Quantitative Analysis

Credit 3(3-0)

This course is intended to provide students with a solid foundation to basic mathematical methods employed in macro and micro economic theory. It includes elementary application of calculus and analytical geometry, and matrix algebra to illustrate income—expenditure model, demand theory, production function, problems of cost minimization and profit maximization, and linear programming. Prerequisite: Economics 300 & 301; Math 111, 112 or 113.

415. Money and Banking

Credit 3(3-0)

An introduction to the classical Keynesian and post Keynesian monetary theories. Also the foundations and practices of Federal monetary policies in achieving various macro goals. Prerequisite: Econ. 310 and junior standing.

420. National Income Analysis

Credit 3(3-0)

An introduction to the modern theory of the determination of the level of income, employment, and prices; the various theories of money and interest; fiscal and monetary policy. Prerequisite: Econ. 301 and junior standing.

425. Economics of Transportation

Credit 3(3-0)

Application of the tools of economics to the problems of the Transportation Industry with such topics as: economic regulation, cost-benefit, rate structure externalities and social vs. individual decision making.

501. Labor Problems

Credit 3(3-0)

An introductory course dealing with the efforts of working people to improve their relative position in the economy; the influence of unionism and of government participation are emphasized. The role of management.

505. International Economic Relations

Credit 3(3-0)

National specialization and international exchange. The history and significance of international trade among nations of the world.

510. Business Cycles

Credit 3(3-0)

The general instability of capitalism and its causes, seasonal fluctuations and the secular trend. Business cycle history and theories. The influence of cycles on government fiscal policy.

512. Introduction to Econometrics

Credit 3(3-0)

This course is intended to provide the student with a working knowledge of applications of modern statistical tools for the formulation and the vertification or refutation of economic theories. Primary attention is given to quantitative estimates of parameters in single equation stochastic models. The course also introduces the student to simultaneous-equation models. Prerequisite: Economics 310 or equivalent or consent of the instructor.

515. Comparative Economic Systems

Credit 3(3-0)

A description and analytical study of the various systems that have developed in different countries at different times, motivations, production and distribution patterns.

520. Economic Development

Credit 3(3-0)

This course surveys the problem of economic growth and development in modern times and analyzes the present efforts to increase the rate of economic growth. Selected case studies will be drawn from both highly developed nations and lesser developed nations. Special emphasis will be given to disproportioned growth in sectors of the United States economy.

525. Economics Seminar

Credit 3(3-0)

The use of economic tools in delineating, analyzing and presenting economic problems that are not included in other courses. This course will include also an exposure to recent development in economics.

599. Independent Study

Credit 3 or 6

The course is designed for students involved in Cooperative Work-Study Program where the length and nature of their involvement warrant the awarding of such credit. The following conditions must be met in order to receive credit: (1) The credit will be determined by the department chairman at the time of registration; (2) the student must be registered at the University during the off-campus assignment; (3) the student should spend a minimum of three months in the off-campus experience for each three semester hours of academic credit. When the off-campus experience is in the form of seminar exposure, then not less than forty-five (45) clock hours should represent three semester hours of academic credit; (4) the student will be required to present a written report and or other evaluation criterion that will be evaluated by the supervising teacher. Any special problem or technical report pursued by the student will be subject to prior approval by the department chairman or supervising teacher. Prerequisite: Consent of the advisor and or department chairman.

Courses Offered to Advanced Undergraduates and Graduates

601. Economic Understanding

Credit 3(3-0)

An introduction to the principles of economics utilizing the macro approach. No credit towards a degree in economics.

602. Manpower Problems and Prospects

Credit 3(3-0)

An analysis of manpower development problems and prospects, with particular reference to the problems of unemployment, underemployment and discrimination. The course will focus on problem measurement, evaluation of existing policy and prospects for achievement of all human resource development. The course will invite an interdisciplinary participation on the part of students and faculty. Prerequisites: Econ. 300 or 301; Econ. 305 or equivalent or consent of instructor.

603. Manpower Planning

Credit 3(3-0)

Manpower planning center chiefly on the adjustment necessary to adapt labor resources to changing job requirements. This course is designed to prepare students to create plans which will facilitate this adjustment. This course will attempt to acquaint the student with labor force and labor market behavior such that he is able to make planning decisions relating to job creation (increasing demand) and education and training (increasing supply). Planning will be done at both the national (macro) and local (micro) levels, with special emphasis on the latter. We will further attempt to evaluate all planning decision by use of Cost-Benefit Analysis or Multivariate Analysis. Prerequisite: Econ. 300 or 301; Econ. 305 or equivalent or consent of instructor.

604. Economics Evaluation Methods

Credit 3(3-0)

The course will cover needed tools of research design, statistical reporting, cost benefit analysis and other related techniques for internal and external evaluations of human resource development programs. The course is designed both for inservice personnel currently employed by agencies, and for the regular student enrolled in a degree-granting program.

610. Consumer Economics

Credit 3(3-0)

This course is designed to acquaint the student with the nature, scope and tools of consumer economics. It is particularly oriented to minority groups, thus focusing on the economic choices currently affecting groups with rising incomes and aspirations. This course will consider the economic choices faced by the consumers in maximizing satisfaction with limited means.

615. Economic, Political and Social Aspects of the Black Experience

Credit 3(3-0)

A study of the political, economic and social tools of current public policy treating the subject of race in America. This course will examine the economic and social conditions of income inequality and explore the national commitment to equal opportunity. Special emphasis will be placed on illustrations from North Carolina and adjacent states.

EC 626. Physical Distribution

Credit 3(3-0)

Analysis of alternative sources of transportation for moving raw materials into the production facility and finished goods into the channels of distribution. Illustrates integration of transportation decisions with those of production, inventory, warehousing and marketing management. Uses quantitative and non-quantitative concepts for plant and warehouse location decisions.

690. Special Topics in Economics

Credit 3(3-0)

An examination of problems and analytical techniques in economics. The pursuit of certain specific or problem oriented area in economics not covered in other courses. Course content may vary from semester to semester. May not be repeated for credit.

Courses Offered to Graduate Students

701. Labor and Industrial Relations

Credit 3(3-0)

Two important sectors of the economy are examined—Labor and Management. Historical, public and governmental influences are studied.

705. Government Economic Problems

Credit 3(3-0)

This course will consider the growth of public expenditures and revenues, and debt of the United States: theories of taxation and tax incidence; and the effects of public expenditures and taxes on economic growth.

710. Economic Development and Resource Use

Credit 3(3-0)

This course deals with resource and economic development in the domestic economy and also a comparison drawn among development, developing and undeveloped societies.

720. Development of Economic Systems

Credit 3(3-0)

An analytical approach to the study of various economic systems, how these systems developed and how they are organized to carry on economic activity.

Courses in Transportation

TR 360. Introduction to Transportation

Credit 3(3-0)

Survey of the historic development and Socio-Economic impact of our nation's transportation system—and the interrelatedness of several modes (water, air, rail, motor and pipeline). Prerequisite: EC 300; Corequisite: EC 301.

TR 450. Carrier Management

Credit 3(3-0)

Introduction to the practical application of management practice and policies in the Carrier Sector of the Transportation Industry.

TR 460. Traffic Management

Credit 3(3-0)

Concepts and problems of freight traffic management, rate-making theories; rate and classification systems. Practical rate problems will be solved. Prerequisite: EC 425 or consent of instructor.

TR 650. Transportation Law

Credit 3(3-0)

A detailed review of the development of transportation law will be made. An analysis of the Interstate Commerce Act and its impact on surface carriers will be completed. This course will assist those students planning to take the bar exam for the Interstate Commerce Commission or those students studying for the Transportation Law exam in the American Society of Traffic and Transportation series. Prerequisite: BA 451—Business Law I or equivalent is recommended.

TR 660. National Transportation Policy

Credit 3(3-0)

A seminar on national transportation problems. This course will involve readings and research on several issues in transportation. Previous policy statements will be reviewed in light of current needs to determine what the current national transportation policy should be.

COURSES IN EDUCATIONAL MEDIA

350-600. Classification of Media Collections (Formerly 310-611)

Credit 3(3-0)

Basic course in techniques of book and non-book description, their organization for services in libraries through decimal classification and their subject representation in the public catalog. Practice in laboratory.

350-601. Reference Materials (Formerly 310-624)

Credit 3(3-0)

The selection, evaluation, and use of basic reference materials with emphasis on the selection of materials, study of contents, methods of location, and practical application.

350-602 Utilization of Educational Media (Formerly 310-644)

Credit 3(2-2)

Applies basic concept to problems in teaching and learning with school and adult audiences. Relates philosophical and psychological bases of communications to teaching. Discusses the role of communications in problem-solving, attitude formation, and teaching. Methods of selecting and using educational media materials effectively in teaching. Experience in operating equipment, basic techniques in media preparation. Practice in planning and presenting a session.

350-603. Production of Instructional Materials (Formerly 310-642)

Credit 3(2-2)

The planning, designing and production of opaque materials, charts, graphs, posters, transparencies, mounting, bulletin boards, displays, models, mockups, spectrums, chalkboards, scriptwriting, and recording techniques.

350-604. Educational Media Administration (Formerly 310-624)

Credit 3(3-0)

Planning, organizing, coordinating, and administering educational media programs. Developing criteria for selection, utilization care, and evaluation of the effectiveness of materials and equipment. Scientific arrangement of learning environments, space and space relations. The planning of facilities and budgeting for program and public relations activities.

350-605. Systems Approach and Curricular Integration (Formerly 310-645)

Analysis of subject content, leaners, specifications, and evaluation of objectives, analysis and sequencing of tasks, design of stimulus materials, selecting and evaluating of materials. Planning instructional units.

350-606. Book Selection and Related Materials for Children Credit 3(3-0) (Formerly 310-650)

A study of children's literature with emphasis on aids and criteria for selection of books and other materials for preschool through late childhood ages, story-telling, and an investigation of reading interests.

350-607. Book Selection and Related Materials for Young People (Formerly 310-651)

A consideration of literature, reading interests, and non-book materials for young people.

350-608. Programming for Instructional Radio and Television

Credit 3(3-0)

Provides the student with the historical background of radio and television, principles and skills in utilizing the theory, language, signs and symbols, of radio and television. Emphasis will be focused on cooperative team teaching approach, experimentation, and innovation as strategies for programming instruction.

350-609. Production for Instructional Radio and Television

Credit 3(1-4)

Affords opportunities for the student to develop and utilize knowledge and skills in designing settings, lighting techniques, operation of controls, directing, camera operation and care, producing and caring for visuals, video tapes, audio tapes, duplication of tapes, rear screen projections and sound effects, background music, also producing multi-media mix programs for various situations such as: slide-tape, or multi-image programs through film, slide, and opaque chain. Special provisions for training in preventive maintenance and minor repairs of equipment will be provided.

350-610. Broadcasting for Instructional Radio and Television

Credit 3(3-0)

Prevents and evaluates live broadcast programs for instruction within the framework of acceptable criteria supported by the profession. Presenting and evaluating the effectiveness of videotaped or video disc recorded programs as used for instructional situations. To develop guidelines for quality radio and television programs.

350-700. Programmed Instruction (Formerly 310-374)

Credit 3(2-2)

Theory, principles, application, and evaluation of programmed instruction techniques, survey of programmed techniques, the selection, utilization, and evaluation of existing programs. Survey of commercial programs, sources and types of teaching machines. Practice in writing programmed instruction units.

350-701. Media Retrieval Systems (Formerly 310-735)

Credit 3(2-2)

A survey of various media classifications, storage and retrieval models as applied to information centers and their operations. Compares traditional models with the logic of manual, mechanical, and electronic retrieval systems. Writing models for independent study.

350-702. Workshop in Educational Media (Formerly 310-736)

Credit 3(3-0)

An exploration in recent materials, methods, and techniques and the development of skills and competencies in audiovisual communications. Demonstrations and presentations by specialists, audiovisual representatives.

350-703. Educational Media Internship and Seminar (Formerly 310-738)

Credit 3(1-4)

This is a professional laboratory designed to provide the student with on-thejob training and direct experiences relating to his "needs" and interest in operating, organizing, and administering a well-rounded Media Education program. This course will afford students with the opportunity and experience to work in a relevant and practical situation that will deepen his understandings, broaden his perspective, gain keener insights, and increase his skills and abilities to organize instructional materials, equipment and work with people.

During a period of at least six (6) weeks, it is desired that the student will have specific duties and responsibilities for observing, studying, and working in the audiovisual media program pertaining to (1) architectural features, (2) program development (3) cataloging, filing, and record keeping, (4) organizational patterns, (5) personnel selection and staffing, (6) administration forms, procedures, and policies, materials, and equipment, (7) public relations, budgeting considerations, (8) in-service education, (9) program evaluation, (10) research and other concomitants, such as attending and conducting pro-

fessional meetings and leadership conferences and seminars.

The coordinator of the Media Education Internship Program in consultation with the student will arrange for his suitable placement under the guidance and supervision of an official of the placement facility whether it be a public school system, industry, business, governmental agency, religious organization, or otherwise. During his internship, the coordinator will visit, observe and confer with the student and his immediate supervisor. This will help to insure that the students' growth and development are being given primary concern, and to serve as feedback for assessing and evaluating his program of study at the University. The student will be required to present a written project describing his internship training and experiences.

350-704. Advanced Reference and Bibliography

Credit 3(3-0)

Special reference problems, methods and materials for school libraries; includes cooperative aspects of librarianship and the development of bibliographies.

350-705. Principles and Problems in Cataloging and Classification

Credit 3(3-0)

Methods of obtaining and organizing materials for effective use in school libraries. A study of descriptive and subject cataloging and handling of audiovisual materials.

350-706. Media in Special Education and Reading

Credit 3(3-0)

This course is designed to provide personnel in special education reading programs with experiences that will enable them to develop competencies and skills in the operation, care, and utilization and production of instructional materials and equipment pertinent to the achievement of their instructional objectives.

350-707. Professional Development of Media Personnel

Credit 3(3-0)

This course is designed to provide for the promotion, stimulation and professional development of educational media personnel. By conducting research projects, contributing to professional publications, and serving on professional committees as active participants.

350.715. Advanced Production in Instructional Radio Credit 3(0-6) and Television

An in depth study of advanced methods and techniques necessary to produce quality instructional radio and television programs. Experimentation, innovations, and research will be encouraged and high production standards in keeping with those of Commercial Stations. Student-produced programs may be broadcast on a cooperative basis over local radio and television facilities.

COURSES IN EDUCATIONAL PSYCHOLOGY **& GUIDANCE**

435. Educational Psychology

Credit 3(3-0)

A study of basic problems underlying the psychology of education, individual differences, development of personality, motivation of learning and development, nature of learning and procedures which best promotes its efficiency.

600. Introduction to Guidance

Credit 3(3-0)

A foundation course for prospective teachers, part-time or full-time counselors who plan to do further work in the field of guidance of education. Special consideration will be given to the nature, scope, and principles of guidance services. No credit toward a concentration in guidance.

623. Personality Development

Credit 3(3-0)

A study of the basic processes in personality development, the contents of personality, and the consequences of personality development.

662. Mental Deficiency

Credit 3(3-0)

A survey of types and characteristics of mental defectives; classification and diagnoses; criteria for institutional placement and social control of mental deficiency.

706. Organization and Administration of Guidance Services Credit 3(3-0)

A study of methods by which guidance policies and services may be properly implemented through organizational framework; consequently, leads to more effective organization of current guidance programs.

707. Research Seminar

Credit 3(1-4)

Critical discussions of research projects in progress and of the related literature to such projects. An acceptable written report is required. The course recommended for guidance majors in the degree program and others seeking the School Couselor's certificate. Prerequisite: Guidance 730, prior or concurrent.

714. Internship in Guidance

Credit 3(1-4)

The Internship will be concerned with experiences involved in the organization and operation of the many and varied public school programs and their interaction with community agencies. An extended period of continuous fulltime experience must be completed by students who have not had previous teaching experience. (Permission must be granted by Counselor-Educator).

715. Measurement for Guidance

Credit 3(2-2)

The development of understandings and skills in collecting and interpreting data concerning the individual, and the use of such data in case studies and follow-up procedures.

716. Techniques of Individual Analysis

Credit 2(2-0)

A study of educational and vocational testing with reference to a general

framework for using statistical information in several types of counseling problems. Statistics necessary for the evaluation of psychological and educational measurement will be considered. This course also includes the measurement of aptitude, including special aptitude, with reference to prediction of proficiency in various occupations and curricula.

717. Educational and Occupational Information

Credit 3(3-0)

Sources and procedures of assembling information about occupations and educations; methods of using, collecting information.

718. Introduction to Counseling

Credit 3(3-0)

Information regarding the background and theories of counseling. Considerations will be given to the counselor's function, counseling interview, use of records, and the school counselor's place in a total personnel program.

719. Case Studies in Counseling.

Credit 2(1-2)

The development of a basic understanding of the case study technique as used in counseling. Compilation, analysis, diagnosis and treatment of theoretical and actual counseling case histories.

720. Principles and Dynamics of Group Counseling

Credit 3(3-0)

Study of groups and one's interaction within groups.

722. Career Education and Vocational Development Theories

Credit 3(3-0)

What career education is and how to implement it along with the study of career development theories, review of vocational development research, application of theoretical propositions to counseling cases, and writing a proposal to investigate career development concepts will be the major units.

723. Student Personnel Services in Post-Secondary Education

Credit 3(3-0)

Theory and practice in counseling problems of the student personnel staff and other supporting services in the post-secondary setting. An in-depth study of student personnel services such as admissions, orientation, educational advising, student programs, health services, living accommodations, financial aid, career counseling and placement will be included.

724. Advanced Counseling Theories, Strategies and Techniques

Credit 3(3-0)

An advanced graduate course designed to offer a thorough in depth examination of the theoretical basis and research evidence for several specific behavior change techniques. Particular attention will be given to application of selected modes of counseling and application of learning models in counseling procedures. It will provide an opportunity for students to further synthesize their own "personal theory" of counseling.

725. Manpower Internship

Credit 3

An Internship involving an extended period of continuous time experience must be completed by each student participating in the manpower concentration. The Internship should be a learning experience, a work experience and an on-the-job training. Thus, one who completes the Internship will be more knowledgeable in the field of manpower. Each student will receive a copy of the job description outlining the duties to be performed in the agency. Students who are placed will intern as manpower administrators, manpower planners, or manpower program evaluators for a semester. During each semester, students are responsible for pre-registering for the manpower internship prior to the actual semester of the Internship. No student will be allowed to begin an internship without proper registration.

726. Educational Psychology

Credit 3(3-0)

A study of the applications of psychological principles to educational practices.

727. Child Growth and Development

Credit 3(3-0)

A comprehensive analysis of physical, mental, emotional, and social growth and development from birth through adolescence.

728. Measurement and Evaluation

Credit 3(2-2)

A consideration of measurement techniques and interpretation of group tests and individual pupil diagnostic tests.

729. Mental Hygiene for Teachers

Credit 3(3-0)

An analysis of the functions of mental hygiene in the total educative process. Attention is given to the basic principles of mental health as these apply to pupils and teachers alike; to the types of adjustment; to the development of personality; and to psychotherapeutic techniques for the restoration of mental health. Prerequisite: Psychology 726.

730. Guidance Practicum

Credit 3(1-4)

Practice in the job of the high school counselor with students of high school age. Primary emphasis will be placed on counseling, but all phases of the work of the counselor will be covered. Students enrolled in this course should have completed major courses in their program and should have demonstrated skills in techniques, principles, and practices in the field. (Permission must be granted by Counselor-Educator.)

COURSES IN ELECTRICAL ENGINEERING

100. Interface to Electrical Engineering

Credit 4(3-3)

An introductory course for freshmen engineering majors. Applications of

Algebra, Matrices, Trigonometric functions, etc. as engineering tools. Use of the calculator and digital computer as computational aids. Resistive Circuit theory. Coordinated laboratory work.

101. Interface to Electrical Engineering II

Credit 4(3-3)

A continuation and expansion of EE 100. Fundamental laws and theorems of linear circuit theory coordinated laboratory work. Prerequisite: EE 100, Corequisite: Math 116.

200. Electric Circuit Analysis

Credit 4(3-3)

Transient and steady state solution to first and second order linear systems in the time and frequency domains; introduction to time varying and nonlinear systems. Coordinated laboratory exercises. Prerequisite: EE 101, Corequisite: Math 300.

300. Electric Circuit Analysis and Synthesis

Credit 4(3-3)

Periodic function analysis of n'th order linear systems. Fourier series and Laplace transform techniques, and introductory synthesis techniques with coordinated laboratory work. Prerequisite: EE 200, Corequisite: Math 500.

320. Electronics 1

Credit 4(3-3)

A study of active devices with emphasis on terminal behavior. Physical electronics, linear and nonlinear modeling. Coordinated laboratory work. Prerequisite: EE 200, Corequisite: Math 500.

325. Principles of Electromagnetic Waves

Credit 3(3-0)

Electromagnetic concepts and effects, vector analysis. Corequisite: Math 500, EE 300.

400. Signals: Analysis and Processing

Credit 3(3-0)

Analysis of system responses to signals using convolution, Fourier integral spectral sampling, correlation, and probabilistic techniques. Prerequisite: EE 300 or consent of instructor.

427. Introduction to Logic Design

Credit 3(1-3)

Study of Boolean algebra; techniques for design and optimization of combinational logic, sequential logic design, flipflops, counters, registers and arithmetic concepts necessary to understand computer architecture. Prerequisite: EE 300 and EE 320.

441. Basic Electrical Engineering I

Credit 4(3-3)

Electrical Engineering, fundamentals and applications for non-electrical engineering students. Electric and magnetic fields; network theory and application; directed and alternating current apparatus. Coordinated laboratory work. Prerequisite: Physics 222 and Math 117.

442. Basic Electrical Engineering II

Credit 4(3-3)

Electronic circuit theory and applications; control of electrical apparatus; electro-chemical processes; electronic analog and digital computer principles. Coordinated laboratory work. Prerequisite: 441.

430. Power Systems, Energy Conversion and Electric Machinery

Credit 4(3-3)

Study of the electric power system as an interconnection of energy conversion and transmission devices; electric machinery; energy and power; operation of a power system. Prerequisite: EE 300 and EE 325.

450. Electromagnetic Radiation and Microwave Theory Credit 3(3-0)

The basic postulates of electromagnetism; the integral laws of free space; the differential laws in free space; static fields; time varying fields. Prerequisite: EE 325.

460. Electronics II

Credit 4(3-3)

A continuation of Electronics I. Principles of semiconductor electronic circuits; rectifiers and filters; amplifiers; feed-back and oscillatory systems. Coordinated laboratory work. Prerequisite: EE 320.

470. Properties of Materials for Electrical Engineering Credit 3(3-0)

The effects of atomic, molecular, and crystal structure on the electrical and physical properties of conducting, insulating and semiconductor materials used in electrical engineering.

Advanced Undergraduate and Graduate Courses

Number and Course		Credit
606	Automatic Control Theory	3(3-0)
608	Solid State Energy Conversion	3(3-0)
610	Quantum Theory for the Solid State	3(3-0)
612	Modulation Theory & Communication Systems	3(3-0)
616	Physics of Solid State Devices	3(3-0)
618	Discrete Systems	3(3-0)
620	Computer Software Design	3(3-0)
622	Electronic Engineering	4(3-3)
627	Fundamentals of Digital Logic	3(3-0)
630	Digital Signal Processing I	3(3-0)
632	Information Theory	3(3-0)
633	Digital Electronics	3(3-0)
636	Computer Methods in Power Systems	3(3-0)
637	Power Systems Analysis	3(3-0)
647	Network Synthesis	3(3-0)
654	Projects in Electronic Networks and Systems	3(1-6)
660	Selected Topics in Engineering	Variable (1-3)

666	Special Projects	Variable (1-3)
670	Semiconductor Theory and Devices	3(3-0)
676	Microprocessors: Theory and Practice	4(3-2)
680	Solid State Technology Lab Techniques	Variable (1-3)
683	Probability and Random Processes	3(3-0)

Advanced Undergraduate (600-699) and Graduate (700-799) Offerings

Under the Master of Science in Electrical Engineering Degree Program

420-606. Automatic Control Theory

Credit 3(3-0)

The automatic control problem; review of operational calculus; state and transient solutions of feedback control systems; types of servo-mechanisms and control systems; design principles. Prerequisite: 420-400 or equivalent.

420-608. Solid State Energy Conversion

Credit 3(3-0)

Review of semi-conductor and solar radiation principles. Operation and design of solid state thermoelectric generators. Operation and design of solar cells. Use of solar collectors and solar cells in terrestrial applications. Prerequisites: 227-406 & 420-460 or consent of instructor.

420-610. Quantum Theory for the Solid State

Credit 3(3-0)

Quantum theory of solids for research in the solid state area. Topics covered: the many-body Hamiltonian, quantum statistics, free energy, crystal binding and symmetry, Fermi and Bose Gases, lattice vibrations, electronphonon interactions, semiconduction, superconduction, magnetic interactions, effects of crystalline imperfections on single crystal behavior. Prerequisites: 227-605.

420-612. Modulation Theory & Communication Systems Credit 3(3-0)

Fundamental principles of modulation theory applied to amplitude, single and double side band, frequency, pulse amplitude, pulse duration, pulse code and multiplexing modulation methods and their application to communication systems are studied. Random signals, noise considerations and probability theory are introduced. Prerequisites: 420-300, 420-320 & 225-500.

420-616. Physics of Solid State Devices

Credit 3(3-0)

Theory of crystal growth, semiconductor behavior, and semiconductor applications. Physics and chemistry of crystal growth, phase diagrams, doping, growth related and thermally produced defects, diffusion theory, band theory, density of states, mobility, deep impurities, p-n junction theory, continuity equations, solar cells, light emitting diodes, solid state detectors. Prerequisites: 227-408 or consent of instructor.

420-618. Discrete Systems

Credit 3(3-0)

Analysis and design of discrete-time systems through time-domain and z-domain techniques; time-domain synthesis and optimal control; mathematical and physical aspects of selected classes of computer simulation. Prerequisite: 420-400 or consent of instructor.

420-620. Computer Software Design

Credit 3(3-0)

An introduction to structured programming techniques that lead to errorfree programs. Concepts of making computers more accessible and useful. Compilers and interpreters will be reviewed as examples. Operating systems will be covered as time allows. Prerequisites: 420-300, 420-460.

420-622. Electronic Engineering

Credit 4(3-3)

A study of various types of electronic circuits used in engineering practice, wave shaping and computer circuits, photosensitive devices and circuits; control and switching circuits; modulation and demodulation circuits. Coordinated laboratory work with industrial application and special projects. Prerequisite: 420-460 or equivalent.

420-627. Fundamentals of Digital Logic

Credit 3(3-0)

Systematic approach to design and understanding of logic circuits. A review of Boolean algebra, combinational and sequential design, and usage of common logic devices are covered. Current commercial devices are referred to as examples. Prerequisites: 420-300, 420-460.

420-630. Digital Signal Processing I

Credit 3(3-0)

Develop working knowledge of basic signal processing functions such as digital filtering, spectral analysis, and detection/post detection processing. Methods of generating the coefficients of the digital filters will be derived. Alternate structures for filters such as indefinite impulse response and finite impulse response will be compared. The effect of finite register length will be covered. Prerequisities: 420-400 & 225-500 or consent of instructor.

420-632. Information Theory

Credit 3(3-0)

Probability theory and its application in the analysis of information transfer. Special attention is given to information in communications, random signals, noise processes, microscopic processes, and macroscopic events. Prerequisite: 420-400 or equivalent.

420-633. Digital Electronics

Credit 3(3-0)

Families of logic: Resistor-transistor logic (RTL), integrated-injection logic (IIL), diode-transistor logic (DTL), transistor-transistor logic (TTL), emitter-coupled logic (ECL), MOS gates and CMOS gates. Basic Digital structures: Flipflops. Registers and counters. Interface between digital and analog signals. Prerequisite: 420-460.

420-636. Computer Methods in Power Systems

Credit 3(3-0)

Modeling and analysis of electric power systems, system load flow analysis, optimal operation, and contingency planning, transients and surge phenomena, system stability. Digital Computer solutions emphasized. Prerequisite: 420-430.

420-637. Power Systems Analysis

Credit 3(3-0)

Study of the dilemma facing the power industry, system model load flow problem, voltage profiles, impact of exponential growth and outages, simple fault studies, blackouts. Digital computer solutions emphasized. Prerequisite: 420-430.

420-646. Network Synthesis

Credit 3(3-0)

Use of positive real functions in the synthesis of passive networks. Investigation of the properties of the driving point and transfer functions of passive networks and synthesis of one and two part networks by positive real functions. Prerequisite: 420-300.

420-654. Projects in Electronic Networks and Systems Credit 3(1-6)

Special topics and laboratory work of special interest to students in electronic networks and communications circuits; most of the work is carried on by the project method and emphasizes actual circuit construction. Prerequisite: 420-300 or equivalent.

420-660. Selected Topics in Engineering

Credit Var. (1-3)

Selected engineering topics of interest to students and faculty. The topics will be selected before the beginning of the course and will be pertinent to the programs of the students enrolled. Prerequisite: consent of instructor.

420-666. Special Projects

Credit Vari. (1-3)

Study arranged on a special engineering topic of interest to student faculty member, who will act as advisor. Topics may be analytical and/or experimental and encourage independent study. Prerequisite: consent of instructor.

420-670. Semiconductor Theory and Devices

Credit 3(3-0)

A study of the phenomena of solid-state conduction and devices using band models; excess carrier in semiconductors; p-n junctions and devices; bipolar junction transfer; field effect transistors; integrated circuits. Prerequisites: 227-406 and 420-460.

420-676. Microprocessors: Theory and Practices

Credit 4(3-2)

An introductory survey of the microcomputer world. Architecture of several representative types will be studied and compared. Software development systems will be reviewed. Interfacing the microcomputer to peripheral devices will be emphasized. Students will work with actual components in the lab. Prerequisite: 420-627.

420-680. Solid State Technology Lab Techniques I

Credit Var. (1-3)

Lectures and experiments in measurement of semiconductor material properties and semiconductor device characteristics. Mobility, resistivity, lifetime, optical absorption; semiconductor diode I-V and C-V measurement techniques. Prerequisite: 420-670 or consent of instructor.

420-683. Probability and Random Processes Credit 3(3-0)

Sample space and events, conditional probabilities, independent events, Bayes' formula, discrete random variables, continuous random variables, expectation of random variable, joint distribution, conditional expectation, Markov chains, stationary processes, ergodicity, correlation and power spectrum of stationary processes.

COURSES IN ELEMENTARY EDUCATION AND READING

100. Orientation

Credit 1(1-0)

A familiarization with methods of improving study, taking notes and using the library.

315. Family, Community, and School

Credit 3(3-0)

Study of the relationships of the family, community, and school that involve the learner, with emphasis on the young child. Attention to family structure, parent education and involvement with the school and community; community development and participation in education. Consideration of research, and identification of current problems and issues. Observations and projects.

451. Foundations of Early Childhood Education

Credit 2(2-0)

The study of the historical background and the sociological, philosophical, economic factors, and current issues relating to early childhood education; the physical plant, equipment, supplies and other facilities necessary for appropriate experiences.

510. Teaching Language Arts in the Intermediate Grades

Credit 2(2-0)

Methods, content, resources, and materials for teaching speaking, listening, writing and spelling in grades 4-9.

511. Teaching Reading in the Intermediate Grades Credit 2(2-0)

Basic course in the methods, materials, and techniques used in reading instruction from the primary area through the study skills techniques of high school. An examination of learning and the teaching of reading in light of curriculum adjustment and procedures for developing expanding reading skills in grades 4-9.

512. Social Studies in the Intermediate Grades

Credit 2(2-0)

The instructional program in the social studies. Emphasis on current methods, organization, materials and resources.

513. Strategies in Teaching Science in the Intermediate Grades

Credit 2(2-0)

The examination design, and evaluation of experiences for teaching science in grades 4-9.

514. Strategies in Mathematics Instruction for the Intermediate Grades

Credit 2(2-0)

Methods, materials, resources and evaluation for teaching modern mathematics in grades 4-9.

519. Preschool Materials, Methods, and Practicum

Credit 3(3-0)

Methods, materials and program planning for the preschool child. Attention to staffing, scheduling, and curriculum planning. Directed observation and participation in an established pre-school program such as a day care center, nursery or kindergarten.

556. Curriculum and Methods in Literature, Language Arts, and Social Studies in Early Childhood Education Credit 3(2-2)

The study of basic principles underlying the social studies and language arts curriculum; children's literature; appropriate materials and methods for kindergarten-primary grades. Development of concepts and skills relating to the scope and importance of social studies and language arts in the total program. Laboratory and observation experiences.

557. Curriculum and Methods in Science and Mathematics in Early Childhood Education Credit 3(2-2)

Basic principles underlying the science and mathematics curriculum. Consideration of appropriate materials and methods for kindergarten through primary grades. Development of concepts and skills relating to the scope and importance of science and mathematics in the schools programs. Laboratory and observation experiences.

558. Student Teaching and Seminar in Early Childhood Education

Credit 6(2-8)

Observation and guided teaching experiences in the kindergarten through grade three to include 90 or more clock hours of actual teaching.

The application and practice of methods, techniques, and materials of instruction in a real classroom situation under supervision, includes purposeful observation; organization of teaching materials; participation in other activities

which will aid in developing a teacher (guidance activities, child accounting, co-curricular activities, parent-teacher associations, teacher's and/or staff development meetings.

630. Foundations in Reading Instruction

Credit 3(3-0)

Basic reading course, consideration of the broad field of reading—its goals and nature; factors affecting its growth; sequential development of skills, attitudes and interests, types of reading approaches, organization and materials in teaching the fundamentals of reading.

635. Teaching Reading Through the Primary Years

Credit 3(3-0)

Methods, materials, and techniques used in reading instruction for preschool through grade three. An examination of learning, the teaching of reading, and curriculum experiences and procedures for developing reading skills.

636. Methods and Materials in Teaching Reading in the Elementary School

Credit 3(3-0)

The application of principles of learning and child development to the teaching of reading and the related language arts. Methods and approaches to the teaching of reading in the elementary school including phonics, developmental measures, informal testing procedures, and the construction and utilization of instructional materials.

637. Teaching Reading in the Secondary School

Credit 3(3-0)

Nature of a developmental reading program, initiating and organizing a high school reading program, the reading program, the reading curriculum, including reading in the content subjects, critical reading, procedures and techniques, and corrective and remedial aspects.

638. Classroom Diagnosis in Reading Instruction

Credit 3(2-0)

Methods, techniques, and materials used in the diagnosis of reading problems in the kindergarten-primary area through the intermediate level. Attention upon the pupil and the interpretation of physiological, psychological, sociological, and educational factors affecting learning to read. Opportunity for identification, analysis, interpretation on, and strategies for fulfilling the reading needs of all pupils. Prerequisite: Education 630 and 635 or 636 or 637.

639. Reading Practicum

Credit 3(0-6)

Application of methods, materials and professional practices relevant to teaching pupils. Provisions for participation in and the teaching of reading. Designed to coordinate the student's background in reading, diagnosis, learning, and materials. Prerequisite: 12 credit hours in reading to include Education 638.

640. Reading for the Atypical Learner

Credit 3(3-0)

Attention to the special education child, their characteristics and problems, development and needs, and specialized techniques and procedures for working with children who have difficulty learning to read.

660. Introduction to Exceptional Children

Credit 3(3-0)

An overview of the educational needs of exceptional or "different" children in the regular classroom situation; emphasis placed on classroom techniques known to be most helpful to children having hearing losses, speech disorders, visual problems, emotional, social handicaps and intelligence deviation, including slow-learners and gifted children. An introduction to the area of special education. Designed for classroom teachers.

661. Psychology of the Exceptional Child

Credit 3(3-0)

An analysis of psychological factors affecting identification and development of mentally retarded children, physically handicapped children, and emotionally and socially maladjusted children.

662. Mental Deficiency

Credit 3(3-0)

A survey of types and characteristics of mental defectives; classification and diagnosis; criteria for institutional placement and social control of mental deficiency. Prerequisite: Special Education 660 and 661.

663. Measurement and Evaluation in Special Education

Credit 3(2-2)

The selection, administration, and interpretation of individual tests; intensive study of problems in testing exceptional and extremely deviant children; consideration to measurement and evaluation of children who are mentally, physically, and emotionally or socially handicapped. Emphasis upon the selection and use of group tests of intelligence and the interpretation of their results.

664. Materials, Methods, and Problems in Teaching Mentally Retarded Children

Credit 3(2-2)

Basic organization of programs for the education of the mentally retarded classification and testing of mental defectives; curriculum development and principles of teaching intellectually slow children. Attention is also given to the provision of opportunities for observing and working with children to the provision of opportunities for observing and working with children who have been classified as mentally retarded. Prerequisite: Special Education 660, 661 and 663.

665. Practicum in Special Education

Credit 3(0-6)

Observation, participation, and teaching in an educational program for the mentally retarded.

683. Curriculum in Early Childhood

Credit 3(3-0)

Curriculum experiences and program planning appropriate to nursery, kindergarten, and primary education. An examination of theoretical models, bases of curriculum, and objectives relevant to early childhood education.

684. Methods in Early Childhood

Credit 3-0)

Administration, principles, practices, methods, and resources in the organization of preschool and primary programs. An interdisciplinary and team approach. Observation for teaching styles and strategies.

COURSES IN ENGLISH

General Education Courses

099. Basic Reading and Writing and Skills

Credit 4(3-3)

The course covers the six basic reading skills: word recognition, meanings, study skills, flexibility, appreciation, and interests; mastery of sentence structure, rudiments of grammar, mechanics and vocabulary study.

*100. Ideas and Their Expression I. (Formerly English 2401)

Credit 3(3-0)

An introduction to oral and written communications; provides the student with experience in writing short compositions, outlining written materials, improving reading, speaking skills.

*101. Ideas and Their Expression II (Formerly English 2402)

Credit 3(3-0)

A continuation of English 100 which provides the student with additional experience in expository writing, with intensive instruction in descriptive, argumentative writing, narrative composition; introduces student to the techniques of investigative writing and to the skills of reading different literary genres; provides opportunities for additional experience in oral expression. Prerequisite: English 100.

102. Developmental Reading (Formerly English 2403)

Credit 1(2-0)

Instruction and practice in methods of increasing rate of reading and techniques of comprehending written material; emphasis upon vocabulary study skills. Limited registration.

205. Topics in Literature

Credit 1(2-0)

Study of selected topics in literature. Elective course primarily for non-English majors. Prerequisite: English 101.

^{*} Courses may be taken to satisfy General Education requirements.

Courses in Humanities

*200. Survey of Humanities I

Credit 3(3-0)

A study of interrelationships of literature, music, and the fine arts; a study of master works, philosophical ideas, and artistic movements of Western Civilization, with attention given also to non-Western culture. Will survey cultures from ancient times to the end of the Middle Ages. Prerequisite: English 101.

*201. Survey of Humanities II

Credit 3(3-0)

A continuation of English 200. Will begin with the Renaissance and will include Neo-Classicism, Romanticism, and modern modes of artistic expression. Prerequisite: English 101 and Humanities 200.

204. Topics in Humanities: A Multidisciplinary Course Credit 3(3-0)

Study of selected topics in literature, art, music, philosophy, and other branches of the humanities. Elective course primarily for non-English majors. Prerequisite: English 101.

420. Humanities III, Great Ideas of World Civilization Credit 3(3-0)

A seminar devoted to the identification, analysis, and appreciation of some of the basic ideas or conceptions which have underlain world culture in the arts, religion, philosophy and social attitudes from ancient times to the present.

Language, Composition, and Reading

*300. Advanced Composition (Formerly English 2440)

Credit 3(3-0)

A study of techniques of narrative, descriptive, expository, and argumentative compostion. Prerequisite: English 101.

450. Advanced English Grammar (Formerly English 2441)

Credit 3(3-0)

An intensive study of the structure of the English language with tolerance towards language dialects and levels as effective communication; emphasis placed upon a knowledge of grammar essential to teaching in the junior and senior high school. Prerequisite: English 101.

501. Introduction to the History of the English Language (Formerly English 2462)

Credit 3(3-0)

A course designed to develop the student's understanding of modern English syntax, vocabulary, etymology, spelling, pronunciation and usage.

510. Reading Skills (Formerly English 2463) Credit 2(2-0)

Open to senior English majors and minors.

A course designed to orient students to the scope of higher-level reading skills and to the problems involved in promoting increased efficiency in reading and secondary school pupils.

Journalism

155. Introduction to Communications Theory (Formerly English 458))

Credit 3(3-0)

Mass communications processes, systems and effects and introduction to legal aspects of the rights and responsibilities of the press, radio, television; basic features of the law of libel, privilege, copyrights, access to information. Prerequisite: English 101 or permission of instructor.

225. Newswriting
(Formerly English 2442 and 455)

Credit 3(2-2)

Theoretical and practical work in gathering, organizing, and writing news; primary attention to the development of journalistic technique. Prerequisite: English 101.

230. News Editing and Layout (Formerly English 456)

Credit 3(3-0)

A continuation of English 225, with primary emphasis on basic copyediting. Extensive practical work in copyreading, headline writing, principles of typography and makeup. Weekly outside news and feature assignments constitute the laboratory period.

231. Advanced Newswriting (Formerly English 457)

Credit (3-0)

Consists of advanced training in specialized reporting. Extensive practice in reporting news and governmental and legislative agencies; exercises in writing and reporting for radio and television and training in public relations releases. Prerequisite: English 225.

330. Feature Writing (Formerly English 459)

Credit 3(3-0)

An intensive practicum of feature writing involving background research for an in-depth report of various topics. Prerequisites: English 225 and 230.

331. Writing for Science and Technology Credit 3(3-0) (Formerly English 460)

Study and practice of the basic techniques of writing and editing scientific and technical materials for both the general audience and the specialists. Prerequisite: Junior standing.

332. History and Law of Mass Communications Credit 3(3-0) (Formerly English 461)

The history of American mass media and the evolution of freedom of the press. An examination of the laws and ethics that govern the mass media. including defamation, libel, slander, obscenity, copyright, and the fairness doctrine. Prerequisite: English 225 and 230.

333. Editorial Writing

Credit 3(3-0)

A study of interpretation and comment and practical exercises in the writing of various types of editorials. Students make a practical analysis of various editorials.

334. Print and Radio/TV Advertising

Credit 3(3-0)

This course will concentrate primarily on the writing of advertising copy for newspapers, magazines, direct mail and radio; and writing of storyboard commercials for television. A detailed study of how to gather, synthesize and assemble data for an advertisement will be covered. Promotional concepts of advertising will be given some treatment. Advertising art work will not be emphasized in detail. Prerequisite: English 225, English 230, 231,

462. Current Issues in Mass Communications

Credit 2(2-0)

A study of the rights, responsibilities and changing characteristics of the mass media and the problems therein. Extensive use of mass communications practitioners and guest speakers, and field trips. Prerequisite: English 225 and 230.

464. Public Information and Public Relations Techniques Credit 3(3-0) (Formerly English 641)

Publicity methods as employed by educational institutions, federal agencies and private industries; how to communicate through newspapers, magazines, radio-television stations and other media. Prerequisite: English 155 and 230.

470. Media Internship (Formerly English 639)

Credit 6(1-10)

On-the-job training with local news gathering organizations; and a critical analysis of a contemporary communications problems. Prerequisites: English 225, 230, and either 231 or 330.

Literature

210. Introduction to Literary Studies (Formerly English 2463)

Credit 3(3-0)

Required of English majors and minors in the sophomore year; open to others only with approval of instructor; the critical analysis, literary criticism, investigative and bibliographical techniques necessary to advanced study in English. This course is a prerequisite for all advanced courses in literature. Prerequisite: English 100.

220. English Literature I (Formerly English 2437)

Credit 3(3-0)

A survey of the literary movements and major authors of English literature in relation to the cultural history of England, from Beowulf to 1700. Prerequisite: English 101, History 100-101.

221. English Literature II (Formerly English 2438)

Credit 3(3-0)

A continuation of English 220 from 1700-Present. Prerequisite: English 100, 101.

400. Survey of Dramatic Literature I (Formerly 2450)

Credit 3(3-0)

A survey course in the history, literature, criticism, and arts of the theatre to the nineteenth century. Prerequisite: English 210.

401. Survey of Dramatic Literature II (Formerly English 2451)

Credit 3(3-0)

A continuation of English 400, from the nineteenth century to the present. Prerequisite: English 210.

410. Shakespeare (Formerly English 2452)

Credit 3(3-0)

An introduction to a study of the works of William Shakespeare through a detailed examination of representative works selected from the major periods of his development as a dramatist. Prerequisite: English 210.

425. World Literature

Credit 3(3-0)

A survey of selected major world writers from ancient times to the present.

430. American Literature I (Formerly English 2455)

Credit 3(3-0)

A study of the literary movements and major authors of American literature

in relation to the cultural history of America from the Colonial Period to 1865. Prerequisite: English 210, Humanities 200-201.

431. American Literature II (Formerly English 2456)

Credit 3(3-0)

A continuation of English 430, from 1865-Present. Prerequisite: English 210, Humanities 200, 201.

433. Survey of Afro-American Literature (Formerly English 629)

Credit 3(3-0)

The study of prose, poetry, and drama by American authors of African ancestry. Their works will be studied in relation to the cultural and literary traditions of their times. Dunbar, Chesnutt, Johnson, Cullen, Bontemps, Hughes, Wright, Ellison, Baldwin, and Yerby will be included. Prerequisite: English 101, Humanities 200-201.

435. The Novel (Formerly English 2457)

Credit 3(3-0)

A study of the novel as an art form, with attention to significant English novelists from 1750 to the present. Prerequisite: English 210.

436. Modern Poetry (Formerly English 2458)

Credit 3(3-0)

A study of poetry as an art form, with attention to significant English and American poets of the twentieth century. Prerequisite: English 210.

500. Literary Research and Criticism

Credit 3(3-0)

OPEN ONLY TO JUNIOR AND SENIOR ENGLISH MAJORS AND MINORS.

Advanced study in the tools and techniques of literary research and critical analysis, emphasizes independent study, a study of the major schools of criticism, and culminates in the completion of a study of a problem in literature.

Advanced Undergraduate and Graduate

603. Introduction to Folklore (Formerly 2498)

Credit 3(3-0)

Basic introduction to the study and appreciation of folklore. (Cross listed as Anthropology 603.)

620. Elizabethan Drama (Formerly 2741)

Credit 3(3-0)

Chief Elizabethan plays, tracing the development of dramatic forms from early works to the close of the theaters in 1642. Prerequisite: English 210, 220-221.

621. Grammar and Composition for Teachers (Formerly English 2472)

Credit 3(3-0)

A course designed to provide a review of the fundamentals of grammar and composition for the elementary or secondary school teacher. (Not accepted for credit toward undergraduate or graduate concentration in English.)

626. Children's Literature (Formerly English 2476)

Credit 3(3-0)

A study of the types of literature designed especially for students in the upper levels of elementary school and in junior high school. (Not accepted for credit toward graduate concentration in English.) Prerequisite: English 10, Humanities 200-201.

627. Literature for Adolescents

Credit 3(3-0)

A course to acquaint prospective and in-service teachers with a wide variety of good literature that is of interest to adolescents. Emphasis on thematic approach to the study of literature, bibliotherapy, continental writers, book selection, and motivating students to read widely and independently with depth and understanding. Prerequisite: English 101, 200, and 201 or graduate standing.

628. The American Novel (Formerly English 2478)

Credit 3(3-0)

A history of the American novel from Cooper to Faulkner. Melville, Twain, Howells, James, Dreiser, Lewis, Hawthorne, Faulkner, and Hemingway will be included. Prerequisite: English 210.

650. Afro-American Drama

Credit 3(3-0)

A study of folk tales, ballads, riddles, proverbs, superstitions and folk songs of black Americans. Parallels will be drawn between folklore peculiar to black Americans and that of Africa, the Carribean, and other nationalities.

652. Afro-American Drama

Credit 3(3-0)

A detailed study of the dramatic theory and practice of black American writers against the backdrop of Continental and American trends. Special attention will be given to the works of major figures from the Harlem Renaissance to the present. Works by Bontemps, Cullen, Hughes, Hansberry, Ward, Davis, Baldwin, Baraka (Jones), Gordone, and Bullins will be included.

654. Afro-American Novel I

Credit 3(3-0)

An intensive bibliographical, critical, and interpretative study of novels by major black writers through 1940. Novelists emphasized include Dunbar, Chesnutt, Toomer, McKay, Larsen, Hurston, Griggs, Fauset, and Wright.

656. Afro-American Novel II

Credit 3(3-0)

An intensive bibliographical, critical and interpretive study of novels by major black writers after 1940. Novelists emphasized include Wright, Ellison, Baldwin, Himes, Demby, Williams, Walker, Brooks, Petry, Gaines, and Mayfield.

658. Afro-American Poetry I

Credit 3(3-0)

An intensive study of Afro-American poetry from its beginning to 1940 with special attention given to poets of the Harlem Renaissance. Poets to be studied include Terry, Hammon, Wheatley, A.A. Whitman, Horton, Braithwaite, J.W. Johnson, Horne, Fenton Johnson, George Douglas Johnston, McKay, Cullen, Cuney, and Hughes.

660. Afro-American Poetry II

Credit 3(3-0)

An intensive study of Afro-American poetry from 1940 to the present with consideration attention given to the revolutionary poets of the sixties and seventies. Poets to be studied included Hughes, Walker, F.M. Davies, Brooks, Brown, Hayden, Tolson, Lee, Reed, Giovanni, Angelou, Jeffers, Sanchez, Redmond, Fabio, Fields, and Jones.

662. History of American Ideas

Credit 3(3-0)

A study of major ideas which have animated American thought from the beginning to the present.

Graduate

These courses are open only to graduate students.

700. Literary Analysis and Criticism (Formerly 2485)

Credit 3(3-0)

An introduction to intensive textual analysis of poetry, prose fiction, prose non-fiction, and drama. A study of basic principles and practices in literary criticism and of the various schools of criticism from Plato to Eliot.

702. Milton

Credit 3(3-0)

(Formerly English 2486)

A study of the works of Milton in relation to the cultural and literary trends of seventeenth-century England. Emphasis is placed upon Milton's poetry.

704. Eighteenth Century English Literature (Formerly English 2487)

Credit 3(3-0)

A study of the major prose and poetry writers of the eighteenth century in relation to the cultural and literary trends. Dryden, Defoe, Swift, Fielding, Addison, Pope, Johnson, and Blake will be included.

710. Language Arts for Elementary Teachers Credit 3(3-0) (Formerly English 2488)

A course designed to provide elementary school teachers with an opportunity to discuss problems related to the language arts taught in the elementary school. (Not accepted for credit towards concentration in English.)

711. Language Arts for Elementary Teachers II Credit 3(3-0)

A continuation of the study of relevant language situations with which elementary teachers should be concerned. Emphasis will be placed on strategies for guiding pupils to explore the nature and structure of language and for teaching essential language skills. (Not accepted for credit towards concentration in English.)

720. Studies in American Literature (Formerly English 2489)

Credit 3(3-0)

A study of major American prose and poetry writers.

749. Romantic Prose and Poetry of England (Formerly English 2490)

Credit 3(3-0)

A study of nineteenth-century British authors whose works reveal characteristics of Romanticism. Wordsworth, Coleridge, Shelley, Keats, Byron, Lamb, Carlyle, and De Quincey will be included.

750. Victorian Literature

Credit 3(3-0)

A study of nineteenth-century Victorian writing, including poetry, fiction, and non-fictional prose. Among the writers to be considered will be Tennyson, Browning, Arnold, Rossetti, Carlyle, Mill, Dickens, the Brontes, Eliot, Thackeray, and Hardy.

751. Modern British and Continental Fiction Credit 3(3-0) (Formerly English 2491)

A study of British and European novelists from 1914 until the present. Included in the study are Joyce, Kafka, Gide, Mann, and Camus.

752. Restoration and 18th Century Drama (Formerly English 2492)

Credit 3(3-0)

A study of the theatre and drama in relation to the cultural trends of the period. Étherege, Farquhar, Vanbrugh, Congreve, Fielding, Gay, Steele, Goldsmith, and Sheridan will be included.

753. Literary Research and Bibliography (Formerly English 2493)

Credit 3(3-0)

An introduction to tools and techniques used in investigation of literary subjects.

754. History and Structure of the English Language (Formerly English 2494)

A study of the changes in the English language-syntax, vocabulary, spelling, pronunciation, and usage from the fourteenth century through the twentieth century.

755. Contemporary Practices in Grammar and Rhetoric (Formerly English 2495)

A course designed to provide secondary teachers of English with experiences in Linguistics applied to modern grammar and composition.

760. Non-fiction by Afro-American Writers

Credit 3(3-0)

A study of non-fiction by black writers including slave narratives, auto-biographies, biographies, essays, letters and orations.

762. Short Fiction by Afro-American Writers

Credit 3(3-0)

An extensive examination of short fiction by Afro-American writers. Among those included are Chesnutt, Dunbar, Toomer, Hurston, McKay Hughes, Bontemps, Wright, Clarke, Ellison, Fair, Alice Walker, Ron Milner, Julia Fields, Jean W. Smith, Petry, Baldwin, Kelley, and Jones.

764. Black Aesthetics

Credit 3(3-0)

A definition of those qualities of black American literature which distinguish it from traditional American literature through an analysis of theme, form, and technique as they appear in a representative sample of works by black writers.

766. Seminar in Afro-American Literature and Language Credit 3(3-0)

A topics course which will vary; focus will be on prominent themes and/or subjects treated by Afro-American writers from the beginning to the present. An attempt will be made to characterize systematically the idiom (modes of expression, style) of Afro-American writers.

770. Seminar

Credit 3(3-0)

(Formerly English 2499)

Prerequisite: 15 hours of graduate-level courses in English.

Provides an opportunity for presentation and discussion of thesis, as well as selected library or original research projects from non-thesis candidates.

775. Thesis Research

COURSES IN FOREIGN LANGUAGE Courses in French

Undergraduate

*100. Elementary French I (Formerly French 101, 102, 2500)

Credit 3(3-0)

A course for beginners which emphasizes the four language skills—listening, speaking, reading, writing. Prerequisite: None.

*101. Elementary French II

Credit 3(3-0)

(Formerly French 102, 103, 2501)

A continuation of French 100 with further emphasis placed on the oral-aural approach. Prerequisite: French 100, or equivalent.

*300. Intermediate French I

Credit 3(3-0)

(Formerly French 201, 2520)

A course which consists of a brief review of pronunciation. Grammar is stressed with emphasis on easy cultural reading. Prerequisites: French 100 and 101, or two units of high school French.

*301. Intermediate French II (Formerly French 202, 2521)

Credit 3(3-0)

This course is a continuation of French 300. Stress is placed on grammar, cultural reading and conversation. Prerequisite: French 300, or equivalent.

400. Phonetics

Credit 3(3-0)

(Formerly French 203, 2522)

A course in French sounds and diction. Required of all students majoring and minoring in French. Recommended for those who wish to improve pronunciation. Prerequisites: French 300 and 301.

402. French for Reading Comprehension

Credit 3(3-0)

Development of skills needed for reading competency and interpretation; preparation for French reading proficiency examinations; emphasis placed on vocabulary development; mastery of all aspects of noun/pronoun character and modifiers; knowledge of tense, mood and form of verb structure; reading comprehension analysis and evaluation of selected passages. Readings will be in areas as the humanities, mathematics, social and natural sciences. Prerequisite: Successful completion of Foreign Language requirements in major area or consent of Instructor.

410. Intermediate Oral French (Formerly French 204, 2523)

Credit 3(3-0)

Intermediate oral French course which prepares students for French 411. It is

^{*} Courses may be taken to satisfy General Education requirements.

designed to enable students to understand lectures and conversations of average tempo. Prerequisites: French 300 and 301.

411. Advanced Oral French (Formerly French 205, 2524)

Credit 3(3-0)

A course which offers to students intensive training in self-expression and an opportunity to improve pronunciation, diction, reading and speaking. Prerequisite: French 410.

415. Survey of French Literature I (Formerly French 301, 2540)

Credit 3(3-0)

A general introduction to the study of French literature. This course gives a clear idea of the great periods and main tendencies in history of French thought and letters from 842 to the 18th century.

416. Survey of French Literature II (Formerly 301, 2541)

Credit 3(3-0)

A continuation of French literature from the 18th century to the present.

417. Literature of Afro-French Expression

Credit 3(3-0)

Introduction to the literary style and currents of thoughts in poetry and prose of selected Afro-French writers in the Caribbean; special attention to "Negritude" as reflected in major works of selected Afro-French and Francophone African authors. Prerequisite: French 301 or equivalent, or consent of Instructor.

505. Advanced French Composition (Formerly French 401, 2560)

Credit 3(3-0)

Advanced course in oral and written self expression in French. Special attention to vocabulary building, free composition and conversation, prepared and improvised, covering the many phases of everyday activities.

506. Advanced French Grammar and Composition Credit 3(3-0) (Formerly French 402, 2561)

Course designed to give the students practical training in the use of advanced French gramar and reading.

508. French Civilization (Formerly French 404, 2562)

Credit 3(3-0)

A general survey of the history of France, with emphasis on the social, political and economic development designed to give the students an understanding of present conditions and events. A detailed study of such French institutions as art, music, and education. Course is also offered in conjunction with reports of collateral readings.

Advanced Undergraduate and Graduate

602. Problems and Trends in Foreign Languages Credit 3(3-0) (Formerly French 501, 2571)

Problems encountered by teachers given consideration. Place and purpose of foreign language in the curriculum today.

603. Oral Course for Teachers of Foreign Languages Credit 3(3-0) (Formerly French 502)

Designed for teachers of foreign languages to improve pronunciation and spelling.

606. Research in the Teaching of Foreign Languages Credit 3(3-0) (Formerly French 503, 2573)

Open to students who are interested in undertaking the study of a special problem in the teaching of a foreign language.

607. French Literature of the Seventeenth Century (Formerly French 302, 2574)

Course presents Classicism through masterpieces of Corneille, Racine, Moliere and other authors of the "Golden Period" in French letters.

608. French Literature in the Eighteenth Century (Formerly French 303, 2575)

To study in particular the life and works of Montesquieu, Voltaire, Rousseau, and the Encyclopedists.

609. French Literature of the Nineteenth Century (Formerly French 304, 2576)

Study of the great literary currents of the Nineteenth century Romanticism and Realism.

610. The French Theatre Credit 3(3-0) (Formerly French 504, 2577)

A thorough study of the French theatre from the Middle Ages to the present

612. The French Novel (Formerly French 505, 2578)

A study of the novel from the Seventeenth Century to the present

614. French Syntax Credit 3(3-0) (Formerly French 506, 2579)

Designed to teach grammar on the more advanced level.

616. Contemporary French Literature (Formerly French 305 and 2542, 2580)

Credit 3(3-0)

Course deals with the chief writers and literary currents from 1900 to the present.

For Graduate Students Only

For descriptions of these courses, see the bulletin of the Graduate School.

720. Advanced Reading and Composition (Formerly 601 and 2580, 2585)	Credit 3(3-0)
722. Romantic Movement in France (1820-1848) (Formerly 602 and 2581, 2856)	Credit 3(3-0)
724. Seminar in Foreign Languages (Formerly 603 and 2582, 2587)	Credit 1(1-0)
726. Contemporary Literary Criticism (Formerly 604 and 2583, 2588)	Credit 3(3-0)

728. Independent Study in Foreign Languages (Formerly 258, 2589 Credit 3(3-0)

Courses in Spanish

Undergraduate

*104. Elementary Spanish I Credit 3(3-0) (Formerly Spanish 101, 102, 2504)

A course for beginners which consists of grammar, composition, translation, practice in pronunciation and use of the spoken language.

*105. Elementary Spanish II Credit 3(3-0) (Formerly Spanish 102, 103, 2505)

Continuation of Elementary Spanish 104. Attention is given to advanced grammar. Prerequisite: Spanish 2504 or equivalent.

*320. Intermediate Spanish I Credit 3(3-0) (Formerly Spanish 201, 2530)

Review of grammar, composition and conversation. Prerequisite: Spanish 105 or two years of high school Spanish.

^{*} Courses may be taken to satisfy General Education requirements.

*321. Intermediate Spanish II (Formerly Spanish 202, 2531)

Credit 3(3-0)

Continuation of Spanish 320. Prerequisite: Spanish 320 or equivalent.

401. Spanish for Reading Comprehension

Credit 3(3-0)

Development of skills needed for reading competency and interpretation; preparation for Spanish reading proficiency examination, emphasis placed on vocabulary development; mastery of all apsects of noun/pronoun character and modifiers; knowledge of tense, mood and form of verb structure; reading comprehension analysis and evaluation of selected passages. Readings will be in such areas as the humanities, the sciences, social and natural sciences and other areas of students' interests. Prerequisite: Spanish 321.

440. Phonetics

Credit 3(3-0)

(Formerly Spanish 202, 2532)

A systematic analysis of speech sounds, and the operation of phonetic laws. Prerequisite: Spanish 105 or equivalent.

441. Intermediate Conversation (Formerly Spanish 204, 2533)

Credit 3(3-0)

Practice and drill in oral Spanish based principally on topics of current interest. Prerequisite: Spanish 105 or equivalent.

422. Introduction to Spanish Literature (Formerly Spanish 250, 2534)

Credit 3(3-0)

Readings of representative authors of Spain.

450. La Cultura Hispanica (Formerly Spanish 301, 2543)

Credit 3(3-0)

A course which covers the basically significant elements of Hispanic Civilization: geography, history, literature, and economics of the Spanish people.

451. Survey of Spanish Literature I (Formerly Spanish 302, 2544)

Credit 3(3-0)

A survey of Spanish literature from the Cid through the golden age with assigned readings and reports.

452. Survey of Spanish Literature II (Formerly Spanish 303, 2545)

Credit 3(3-0)

A survey of Spanish literature from the seventeenth century to the present.

^{*} Courses may be taken to satisfy General Education requirements.

455. Syntax (Formerly Spanish 304, 2546)

Credit 3(3-0)

Systematic study of Spanish grammar with conversational and other exercises based on contemporary authors.

Courses in German

*102. Elementary German I (Formerly German 101, 102, 2502) Credit 3(3-0)

Fundamentals of pronunciation and grammar. Attention given to prepared and sight translations and vocabulary building.

*103. Elementary German II (Formerly German 102, 103, 2503)

Credit 3(3-0)

Continuation of emphasis on grammar, vocabulary building, prepared and sight translations. Maximum attention given to graded readings in German prose and drama.

420. Conversational German (Formerly German 201, 2526) Credit 3(3-0)

Intensive practice in everyday German is provided. Prerequisites are German 102, 103, or approval of instructor.

422. Intermediate German I (Formerly German 202, 2527) Credit 3(3-0)

This course is open to students who have completed German 102 and 103. The students read a cross-section of the simpler writings in German literature and German newspapers.

423. Intermediate German II (Formerly German 203, 2528) Credit 3(3-0)

The students continue simple readings from German literature and read also a significant, simplified novel.

425. Intermediate Scientific German (Formerly German 205, 206, 2529)

Credit 3(3-0)

Works in science on the second-year level.

427. Survey of German Literature (Formerly German 2530) Credit 3(3-0)

A general introduction to the study of German literature. This course is

intended to give an over-all picture of German literature and an opportunity to read outstanding works not offered in other German courses.

* Courses may be taken to satisfy General Education requirements.

Courses in Russian

*106. Elementary Russian I (Formerly Russian 2506) Credit 3(3-0)

An elementary course for beginners which consists of grammar, translation, practice in pronunciation and limited use of the spoken language. Prerequisite: None.

*107. Elementary Russian II (Formerly Russian 2507) Credit 3(3-0)

Continuation of Elementary Russian 106. Attention is given to more advanced grammar. Reading in Russian is stressed. Prerequisite: Russian 106.

* Courses may be taken to satisfy General Education requirements.

COURSES IN HEALTH, PHYSICAL EDUCATION AND RECREATION

Undergraduate

200. Personal Hygiene

Credit 2(2-0)

This course is designed to give the student definite knowledge of the principles of personal health, both mental and physical, and to prepare him for self guidance through and beyond the college years. Emphasis is placed upon information pertinent to social behavior today and upon effective approaches to college living.

220. Community Health

Credit 2(2-0)

An introductory study of environmental factors which affect health. Emphasis will be placed upon the health of the group rather than that of the individual. Consumer health, community resources for health and prevention and control of disease through organized community efforts will be stressed. (Prerequisite: 200.)

440. Advanced Hygiene and Principles of Health Education Credit 2(2-0)

A comprehensive review of health facts and scientific principles applicable to

the prospective teacher, the school child, and the community. Fundamentals of health promotion in the school program are considered. (Prerequisite: HE 200; 21.)

442. First Aid, Safety, and Prevention of Injuries

Credit 3(2-2)

Techniques of first aid to the injured in the home, school and community and the teaching of safety measures to be practiced in daily living; the prevention and care of the injuries occurring in physical education classes and in competitive sports. The standard Red Cross First Aid Certificate is awarded upon successful completion of the course. (Prerequisite: Zoo. 469)

560. The Teaching of Health Education

Credit 2(2-1)

Methods, materials and procedures for the teaching of health in the elementary and secondary schools. Field experience will include: observations, service as aides and assistants. (Prerequisite: Health Education 220 and 442; Zoology 469, 560; and HE 440.)

651. Personal, School and Community Health Problems Community

Credit 3(3-0)

A study of personal, school and community health problems and resources. Emphasis is placed on the control of communicable diseases, healthful school living and the development of individuals of the scientific attitude and a positive philosophy of health living. Field experiences will include: observations. service as aides and assistants.

General Physical Education Requirement

101. Fundamentals of Physical Education

Credit 1(0-2)

To develop an understanding of the values and the logic behind exercise and sports activity and regular habits of exercise, to determine the physical fitness needs of the student with the nature, basic rules, techniques and skills of a wide variety of popular American sports and guide him into activities which will be of most interest and benefit to him now and in the future.

102. A Continuation of 101.

Credit 1(0-2)

229. Modern Dance

Credit 1(0-2)

To develop an understanding of the various qualities of movement; the techniques of obtaining and applying them in the art form of dance.

231. Folk and Tap Dance

Credit 1(0-2)

Clog, tap and folk dances characteristic of many nationalities.

233. Social and Country Dance

Credit 1(0-2)

Ballroom, square, and round dance forms; fundamentals leading and following, dance etiquette.

234. Team Sports: Hockey, Soccer, Basketball (Women) Credit 1(0-2)

Fundamental techniques, rules, strategy, terminology, and cultural significance of field hockey, soccer and basketball.

235. Team Sports: Volleyball, Speedball, Softball (W) Credit 1(0-2)

Fundamental techniques, rules, strategy, terminology and cultural significance of volleyball, speedball, and softball.

237. Group Games, Football and Basketball Credit 1(0-3)

Practice methods and applied techniques of a large variety of games of lower organization of the circle, group, and line types which might be suitable for playground, gymnasium, camp and for adult gatherings. Concentration on developing performance skills and understanding of football and basketball.

238. Baseball, Track and Field

Credit 1(0-3)

To develop performance skills, methods, and techniques in baseball, track and field.

240. Introduction to Physical Education

Credit 2(2-0)

Survey of the nature and scope of physical education; interpretation of objectives and philosophy of physical education as a part of the total educational program. Qualifications, responsibilities, and opportunities of professional personnel. Evaluation of personal fitness and suitability to area of interest.

246. Individual Sports: Archery, Tennis, Badminton, Golf Credit 1(0-2)

Fall or Spring. Techniques, rules, playing courtesies, and significance of individual sports to college and after school life.

247. Individual Sports: Recreational Games

Credit 1(0-2)

Shuffleboard, handball, deck tennis, table tennis, croquet, modified bowling and horseshoe.

248. Adapted Physical Education

Credit 1(0-2)

A continuation of 454.

249. Individual Sports and Combatives

Credit 1(0-3)

To develop performance skills in combatives and a wide variety of individual sports including shuffleboard, handball, table tennis, badminton, croquet, archery, golf and tennis.

251. Softball, Soccer, and Volleyball (Men)

Credit 1(0-2)

To develop an understanding of rules, strategy, and performance skills in softball, soccer, and volleyball.

252. Touch Football, Speedball, and Basketball (Men) Credit 1(0-2)

To develop an understanding of rules, strategy, and performance skills in touch football, speedball, and volleyball.

261. Swimming, Beginning. Fall or Spring

Credit 1(0-2)

To teach the elementary skills as outlined in the American Red Cross Standards for beginning swimmers.

263. Rhythmics

Credit 1(0-2)

Suitable types of rhythmical activities for boys and men including fundamental movements, folk, tap, social dance and singing games.

335. Adapted Physical Education

Credit 1(0-2)

Special activities designed for those students whose physical examination shows that they are unable to participate in regular physical education classes.

343. Bowling

Credit 1(0-2)

To develop performance skills and techniques in bowling.

344. Beginning Tennis and Badminton

Credit 1(0-2)

To develop an understanding of rules, strategy and performance skills in tennis and badminton.

361. Intermediate Swimming

Credit 1(0-2)

Swimming for Intermediates

441. Beginning Golf

Credit 1(0-2)

To develop performance skills in tennis and badminton.

443. Skating for Beginners

Credit 1(0-2)

To develop performance skills and techniques in ice skating.

445. Kinesiology

Credit 2(2-0)

A study of the body movements, types of muscles exercise and their relation to the problems of body development. (Prerequisite: Zoology 469.)

446. History and Principles of Physical Education

Credit 3(3-0)

The evolution of physical education from the earliest time to the present day. Consideration of the relationship of physical education to education and to national life and ideas through the different historical periods. A critical analysis of the scientific basis for physical education with applications of the aims and objectives to the modern concepts of education.

448. Gymnastics I

Credit 1(0-2)

An introduction to the basic skills of tumbling, floor exercise, trampoline and different types of vaulting. The course will include methods and basic evaluation.

450. Advanced Gymnastics

Credit 1(0-2)

Men: Fundamental skills and routines on the following gymnastics apparatus: rings, parallel bars, horizontal bar, and side horse.

RECREATION COURSES

112. Summer Field Experience

Credit (6-0)

A placement program conducted in cooperation with a formal recreation agency. The student is assigned to an agency during the summer. The student is required to maintain records of daily experiences relative to organization, programs, problems, supervision, conferences and budget. Prerequisite: Field Experiences: 402, 408, 509, 510.

402. Field Experience I

Credit 2(0-4)

Laboratory experiences during the semester in an operating recreational program.

408. Field Experience II

Credit 2(0-4)

Practices in a second agency of Field Experience.

463. Principles and Practices of Outdoor Recreation

Credit 3(2-2)

Philosophy, organization, administration and laboratory experiences in out-door recreation.

464. Group Leadership

Credit 2(2-0)

Techniques in group dynamics and methods of developing group leadership capabilities.

465. Program Planning in Recreation

Credit 3(3-0)

This course is an analysis of recreation programs. Emphasis is placed on objectives, personnel and facilities.

466. Camp Administration

Credit 3(3-0)

The organization and administration of camp activities. Programming camping activities that will apply to all ages and both sexes.

509. Field Experience III

Credit 2(0-4)

Practices in a third agency of Field Experience.

510. Field Experience IV

Credit 2(0-4)

Practices in a fourth agency of Field Experience.

561. Methods of Research and Evaluation in Recreation

Credit 3(2-2)

The application of methods of research and evaluation to the various problems in recreation.

570. Supervision of Recreation and Park Services

Credit 3(3-0)

An analysis and investigation of supervision of employees involved in recreational services.

451. Dance Composition

Credit 1(0-2)

The rhythmical and musical basis of dance, the elements of dance construction. Theory and practice of skills involved. (Prerequisite: 229.)

452. Applied Dance

Credit 1(0-2)

A coordinated course designed to increase skills in technique and the use of related art materials. (Prerequisites: 229, 231, 451.)

453. Techniques and Methods in Fall and Indoor Activities Credit 2(1-4)

Theory and practice of field hockey, soccer, archery, golf, basketball, gymnastics, and apparatus. Analysis of performance skills, materials and techniques. Opportunity for officiating and obtaining local and national official rating.

454. Adapted Physical Education

Credit 1(0-2)

455. Techniques and Methods of Seasonal and Indoor Activities

Credit 2(1-4)

Theory and practice of volleyball, recreational games, speedball, softball, tennis, badminton, track, and field. Materials and teaching techniques, analysis of skills involved. Opportunity for obtaining official's ratings.

456. Teaching of Soccer, Football and Basketball

Credit 2(1-2)

Consideration is given to the teaching of history, rules, performance skills, methods of organizing practices, strategy, team offenses and defenses, and

various formations for the three sports. Field experience will include: observations, service as aides and assistants.

460. Community Recreation

Credit 2(2-0)

A study of city, state, and national organization. Practice in the general principles and techniques in the organization and promotion of leisure activities for home, school, and community. Field experience will include: observations, service as aides and assistants.

461. The Teaching of Individual Sports and Net Games

Credit 2(1-2)

Methods and techniques for teaching individual sports including shuffle-board, handball, table tennis, badminton, archery, deck tennis, volleyball, newcomb, and paddle tennis. Field experience will include: observations, service as aides and assistants.

462. Elementary School Physical Education

Credit 2(1-2)

Philosophy, program planning, and method for teaching children. Observation and instruction of children at various grade levels. Experiences in simple games, relays, students, tumbling, creative rhythms and dance movement exploration. (Prerequisite: 240—Admittance to the Teacher Education Program.)

547. Baseball Stunts.

562. The Teaching of Physical Education

Credit 2(1-2)

Same as Education 533.

563. Adapted Physical Education

Credit 2(2-0)

Methods of examining and determining needs of the handicapped; activities suitable for individuals with abnormal body conditions, and the conduct of a program of restricted activities to meet their needs. Field experience will include: observations, service as aides and assistances.

564. Minor Problems in Health and Physical Education

Credit 2(2-0)

This course is designed primarily for seniors to provide them with an opportunity to investigate selected professional problems.

565. Problems in Physical Education

Credit 2(2-0)

Special administrative problems in the organization of physical education programs and the coordination of the different phases pertinent to men and women of professional construction in the light of historical backgrounds, intrammural activities, girls' athletics, athletic insurance, and athletic associations.

566. The Organization and Administration of Health and Physical Education

Credit 3(3-0)

Philosophy and policies in the administration of a health and physical education program, including health services, healthful school living, health instruction, the classification of students, the staff, teaching loads, time schedule, finance, the gymnasium, locker-rooms, equipment, intramural and interscholastic athletics. Field experience will include: observations, service as aides and assistants. (Prerequisites: 446 and permission of advisor.) Observation and evaluation of programs are required.

567. Advanced Techniques and Methods in Physical Education Activities

Credit 1(0-2)

A course designed to increase skill in technique and the use of related materials in the areas of dance, sports, gymnastics, aquatics, fundamentals of marching and conditioning activities. Emphasis is placed upon the development of competency in areas of individual student weakness.

568. Physical Education Specialization

Credit 1(0-2)

Opportunities for careful exploration in dance, aquatics, sports, gymnastics through skill improvement, independent study, field experience and special projects pertinent to the particular area of interest.

569. Methods of Research and Evaluation in Health and Physical Education

Credit 3(2-2)

The use of various research methods as applied to health education and the study of methods of evaluating biological, social and physiological outcomes for health education and physical education. Elementary statistical procedures are utilized. Prerequisite: Psychology 436.

Courses for Advanced Undergraduate and Graduate Students

655. Current Problems and Trends in Physical Education

Credit 3(3-0)

A practical course for experienced teachers. Consideration given to individual problems in physical education with analysis of present trends.

656. Administration of Interscholastic and Intramural Athletics

Credit 3(3-0)

A study of the relation of athletics to education, and the problems of finance, facilities, scheduling eligibility, and insurance. Consideration given to the organization and administration of intramural activities in the school program.

657. Community Recreation

Credit 3(3-0)

A study of the recreational facilities and problems with consideration being given to the promotion of effective recreational problems in rural and urban communities.

658. Current Theories and Practices of Teaching Sports Credit 3(3-0)

Methodology and practice at various skill levels. Emphasis placed on seasonal activity.

669. The Physiology of Exercise

Credit 3(2-2)

The purpose of this course is to observe and record the effects of physical activity on the organic systems and service organs of the human body and to learn basic laboratory techniques and procedures of physical education.

For Graduates Only

330-780. Organization and Administration of Health, Physical Education and Recreation in Elementary Schools

Credit 3(3-0)

This course studies the modern developments in methods and materials of elementary school physical education. Prerequisite: Consent of the instructor.

330-785. Research in Health, Physical Education and Recreation

Credit 3(3-0)

A course that is designed to study the various methods of investigating the principles underlying the work in the field of health, physical education and recreation. Prerequisite: Consent of the instructor.

330-786. Scientific Foundations of Physical Education

Credit 3(3-0)

A course designed to discuss scientific approaches to physical education and methods of applying these scientific investigations to the classroom. Prerequisite: Consent of the instructor.

330-787. Scientific Foundations of Physical Fitness Credit 3(3-0)

A study of the concepts of physical fitness and the application of these concepts to school and community programs. Prerequisite: Consent of the instructor.

330-798. Seminar

Credit 3(3-0)

A course of study in which the research projects are prepared, discussed, and evaluated by the faculty and students.

COURSES IN HISTORY

*100. History of World Civilizations-Part I.

Credit 3(3-0)

A general view of the development of the social, political, economic, religious, and cultural life in world civilizations. Part I treats the period from the Ancient World through the 17th century.

*101. History of World Civilizations—Part II.

Credit 3(3-0)

A continuation of the social, political, economic, religious, and cultural life in world civilizations from the Age of Enlightenment to the present.

204. United States from 1492-1865

Credit 3(3-0)

A survey of the origin and development of the American nation to 1865.

205. United States Since 1865

Credit 3(3-0)

A continuation of History 204.

208. History of North Carolina

Credit 3(3-0)

A general survey of North Carolina from colonial times to the present.

215. History of Africa to 1800

Credit 3(3-0)

A survey history of Africa to 1800.

216. History of Africa Since 1800

Credit 3(3-0)

(A continuation of History 215)

A survey history of Africa since 1800.

250. The Nature, Study, and Writing of History

Credit 3(3-0)

The course includes material and presentations leading to an understanding of the basic nature of history, how to study it, methods and techniques in researching and writing it, various aspects and components of general history, and more summarily, with historiography and philosophies of history.

300. Ancient History

Credit 3(3-0)

A history of the civilizations from the beginnings through the Roman Empire.

^{*}General Education courses

302. The Pre-Modern West

Credit 3(3-0)

A survey of major developments in the Mediterranean and Western Europe from the origin of the Roman Empire through the end of Middle Ages.

303. Early Modern Europe: Renaissance to 1815

Credit 3(3-0)

A survey of major trends in the development of early modern Europe. Topics to be discussed include: Renaissance, Reformation, Scientific Revolution, Enlightenment, Absolutism, and the French Revolution.

304. Modern Europe Since 1815

Credit 3(3-0)

A survey emphasizing main trends in European development; political and social impact of the French Revolution; Industrial Revolution; authoritarianism vs. liberalism; church vs. state; nationalism; imperialism; World Wars I and II: Communism, Nazism, present-day Europe.

305. Socialism Since Karl Marx

Credit 3(3-0)

This course will trace and analyze the transformation of socialism from a critique of industrial capitalism into a theory of economic growth for developing nations. Special emphasis will be placed on the writings and practices of Marx, Lenin, and Mao.

306. History of Women Since 1800

Credit 3(3-0)

This course will trace the changes in female self-images and roles since the early 19th century in Europe and the United States. It will concentrate upon the growth of new educational and occupational opportunities for women, changing concepts of motherhood, and the rise of female protest movements.

307. The Historical Origins of Environmental Crises

Credit 3(3-0)

This course will deal with man's changing philosophical and technological relationship with his natural environment since the start of the Industrial Revolution.

310. The Afro-American in the United States to 1865

Credit 3(3-0)

A survey of the history of the Negroes in the United States from the African background through the emancipation. Emphasis is on American slavery, abolition movement, and the Free Negro community.

311. The Afro-American in the United States Since 1865

Credit 3(3-0)

(A continuation of History 310)

Particular emphasis is placed upon the struggle for equality.

312. History of Religions

Credit 3(3-0)

A course that surveys the origin and development of the traditional religions of India and China and the three "Religions of the Book:" Judaism, Christianity and Islam.

327. History of Latin America

Credit 3(3-0)

A survey of the history of Latin America from the pre-columbian civilizations through the colonial empires and independence to the present day.

328. Slavery in the United States, 1619-1865

Credit 3(3-0)

A survey of the development of the institution of slavery in the United States from 1619 to the ratification of the Thirteenth Amendment.

330. History of the Far East to 1800

Credit 3(3-0)

A study of the history and culture of the Chinese and Japanese peoples from the classical civilizations to the arrival of the European nations.

331. History of the Far East Since 1800

Credit 3(3-0)

A study of the modern history of the Far East, an analysis of the reaction of China, Japan, Korea and Vietnam to the western powers and the growth of these nations into modern powers.

334. Honors in History

Credit 3(3-0)

Intensive reading and study or research in the field of history for departmental majors with a 3.0 average.

402. The Rise of Christianity

Credit 3(3-0)

A historical study of the origins and development of the Christian Church from its beginnings to the end of the ancient world (around 476 A.D.). The political, social, economic, intellectual, and religious environment will be considered equally along with the internal development of Christian institutions, beliefs, and practices.

405. History of England

Credit 3(3-0)

This course concentrates on English history since 1688. Special attention is given to the following topics: Glorious Revolution, industrialization, imperialism, decolonization, Victorianism, Ireland, and the current crisis in English society.

407. American Diplomatic History

Credit 3(3-0)

A study of the relations of the United States with other nations in the 20th century, with special reference to the development and use of the economic, political, military, and naval power necessary to give support to policy.

410. American Constitutional History

Credit 3(3-0)

A study of the constitutional development of the United States from the adoption of the Constitution to the present time.

412. Modernization in Africa from 1920 to the Present

Credit 3(3-0)

The study of African development since World War I and how traditional ideas have been lost, regained, or compromised with new conflicting ideas.

416. History of Black Culture in the United States

Credit 3(3-0)

Focus on early cultural developments, folk culture, and religion in antebellum America; social and cultural trends in the twentieth century; the "Harlem Renaissance"; urban life.

420. Seminar: Urban America

Credit 3(3-0)

Special topics in the rise of the American city and the development of urban patterns of life, concentration on such themes as population shifts to cities, the development of slums and ghettos, growth of municipal institutions and services, and the relationship of government with city residents. (Prerequisite: 205 and consent of the instructor).

430. Topics in Twentieth Century American History

Credit 3(3-0)

In depth and analysis of selected topics since the late nineteenth century, with special emphasis on written historical communication. (Prerequisite: six hours of American history (204 and 205) and the consent of the instructor).

442. Russian History

Credit 3(3-0)

The history of Russia from the earliest times to the present, with emphasis on the twentieth century.

450. Modernization in Historical Perspective

Credit 3(3-0)

This course concentrates on an analysis of the various paths of modernity taken by several advanced societies, notably England, France, Germany, Russia, Japan, and the United States. In particular, attention will be devoted to the causes and effects of: industrialization, the formation of new social classes and attitudes, urbanization and demographic growth, bureaucratization, changes in family structure, intellectual responses to rapid change, and the development of the modern state.

Courses in Philosophy

260. Introduction to Philosophy

Credit 3(3-0)

An introductory course covering such topics as theories of reality, the nature in mind and knowledge, and the higher values of life.

261. History of Philosophy

Credit 3(3-0)

This history of philosophic thought is traced from ancient Greek philosophers to modern philosophers through Hegel.

262. Logic Credit 3(3-0)

An introductory course designed to give a critical analysis of the principles, problems and fallacies in reasoning.

308. Culture and Value

Credit 3(3-0)

A critical study of the nature and justification of basic ethical concepts in light of historical thought.

309. Contemporary Philosophy

Credit 3(3-0)

A critical investigation of some contemporary movements in philosophy with special emphasis on existentialism, pragmatism, and positivism.

Courses in Geography

*200. Principles of Geography

Credit 3(3-0)

A survey of the principles of geography.

*210. World Regional Geography

Credit 3(3-0)

A survey of the geographic character of the major culture regions of the world. Contemporary cultural characteristics are examined within the framework of both environmental relationships and historical development.

319. Regional Geography of Anglo-America

Credit 3(3-0)

A study of geographic regions of the United States and Canada.

322. Economic Geography

Credit 3(3-0)

A geographical survey of major economic activities as agriculture, forestry, fishing, mining, manufacturing, and commerce. Emphasis is placed upon areal patterns of production and exchange.

^{*}General Education courses

Courses in History

Courses for Advanced Undergraduates and Graduates

600. The British Colonies and the American Revolution Credit 3(3-0)

Intensive analysis of special problems in Colonial and Revolutionary America.

603. The Civil War and Reconstruction

Credit 3(3-0)

This course begins with a summary of the Civil War, then treats the historiography of the Reconstruction Period, the Reconstruction of the South, and the restoration of the Union.

605. Seminar on the Soviet Union

Credit 3(3-0)

A seminar course on the Soviet Union including extensive reading and discussion and a major research paper.

606. United States History, 1900-1932

Credit 3(3-0)

This course traces the political, economic, and social forces operating in the United States and their effect upon the people. Emphasis will be placed upon the Progressive Movement, World War I, and the Great Depression.

607. United States History, 1932-Present

Credit 3(3-0)

(A continuation of History 606)

Emphasis will be placed upon the New Deal, World War II, and the Social Revolution in the 1960's.

615. Seminar in the History of Black America

Credit 3(3-0)

A reading, research, and discussion course which concentrate attention on various aspects of the life and history of Afro-Americans.

616. Seminar in African History

Credit 3(3-0)

Research, writing and discussion on selected topics in African history.

617. Readings in African History

Credit 3(3-0)

By arrangement with instructor.

625. Seminar in Historiography and Historical Method Credit 3(3-0)

The study of the writing of history as well as training in research methodology and communication.

626. Revolution in the Modern World

Credit 3(3-0)

A comparative study of revolutionary movements and outbreaks with special emphasis on the French, Russian, and Chinese Revolutions plus an evaluation of theories of revolution in light of historical examples.

630. Studies in European History, 1815-1914

Credit 3(3-0)

Intensive study of selected topics in Nineteenth Century European history.

631. Studies in Twentieth Century Europe, 1914 to the Present

Credit 3(3-0)

Reading course in contemporary European history since 1914.

633. Independent Study in History

Credit (1-3)

By arrangement.

*645. American Foreign Policy-1945 to Present

Credit 3(3-0)

Examination of forces and policies that have emerged from Potsdam, Yalta, and World War II. Emphasis will be on understanding the policies that were formulated, why they were formulated, the consequences of their formulation, and the alternative policies that may have come about. Prerequisites: Survey course in American history, American Diplomatic history or consent of instructor.

Courses in Geography

Courses for Advanced Undergraduates and Graduates

640. Topics in Geography of Anglo-America

Credit 3(3-0)

Selected topics in cultural geography of the United States and Canada are studied intensively. Emphasis is placed upon individual reading and research and upon group discussion.

641. Topics in World Geography

Credit 3(3-0)

Selected topics in geography are studied intensively. Concern is for cultural characteristics and their interrelationships with each other and with habitat. Emphasis is upon reading, research, and discussion.

^{*}Political Science 645 is accepted for history credit.

COURSES IN HOME ECONOMICS

Courses in Clothing, Textiles and Fashion Merchandising

Undergraduate

122. Clothing Study and Selection.

Credit 2(2-0)

A basic study of the clothing needs of the individual and family based on physical and non-physical aspects with emphasis on social and psychological concepts.

123. Textiles.

Credit 3(2-2)

An introduction to the study of textiles, their sources, characteristics and production; the performance, use and care of fabrics.

124. History of Costume.

Credit 3(3-0)

An introduction to the study of textiles and costume for ancient to modern times.

126. Theory and Fundamental of Fashion Illustration Cre

Credit 3(3-0)

Study of the theory and development of fashion sketching techniques, including the sources of design.

321. Basic Clothing Construction.

Credit 4(1-6)

Fundamental principles of clothing construction based on the use of the commercial pattern. Emphasis is placed on altering the commercial pattern to achieve good fit. (Prerequisites: Home Economics 122 and 123)

422. Dress Design and Pattern Study.

Credit 4(1-6)

The application of art principles in creating dress design by the methods of draping and flat pattern making. (Prerequisites: Home Economics 122 and 321)

423. Advanced Clothing Construction.

Credit 4(1-6)

The application of advanced construction and soft tailoring techniques toweard the development of garments for personal use. Laboratory experience will contrast the two techniques and emphasize the use of wool and other woven fabrics. (Prerequisites: Home Economics 122, 123, 321)

425. Aspects of Dress.

Credit 3(3-0)

The study of the interaction of the social, psychological and economic aspects of dress.

426. Problems in Clothing, Textiles and Fashion A, D, C, Merchandising.

Credit 3(3-0)

Independent study of special problems in selected areas of clothing, textiles, or fashion merchandising. (Prerequisite: Permission of Instructor)

Food and Nutrition 437. Cooperative Training in Industry I

Credit (1-3) (Variable)

Student must be in industry full time one semester or summer in his major field of work, and complete the University Co-op requirements. He will be evaluated on reports from industry and a University coordinator. Twelve credit hours is the maximum to be earned in the Co-op arrangement that can be used as electives toward degree programs in the School of Agriculture.

521. Field Experience. A, B, C,

Credit 4(0-8)

A course designed to give the student practical experiences in one of the areas of clothing, textiles, fashion merchandising or retailing. (Prerequisite: Permission of instructor)

523. Seminar in Fashion Apparel Fundaments.

Credit 4(2-4)

Discussion of current trends in fashion apparel, fashion coordination and analysis of the functions of fashion merchandising, field trips to fashion centers. (Prerequisite: Permission of Instructor)

525. Fashion Marketing and Merchandising.

Credit 3(3-0)

A synthesis of business knowledge and its application to fashion field.

Advanced Undergraduate and Graduate Courses

623. Textile Chemistry.

Credit 3(1-4)

An introducation to the chemistry of the major classes of nature and man-made fibers, including their structure, properties and reactions. Laboratory work will include considerable of chemical damage to fabrics, finishes, and dyes. (Prerequisites: Chemistry 104 and 105, Textiles 123)

624. Advanced Textiles

Credit 3(2-2)

A study of the physical and chemical properties of textiles fibers and fabrics with emphasis on recent scientific and technological developments. (Prerequisit: Home Economics 122)

625. Experimental Clothing and Textiles

Credit 3(1-4)

Independent experimentation with new fabrics and finishes, including furs and leathers. (Prerequisite: Permission of instructor)

626. Tailoring.

Credit 4(2-4)

A study of the principles of hard tailoring with emphasis on comparing the various methods and analyzing tailored garments.

Courses in Food and Nutrition

Undergraduate

130. Food Preparation.

Credit 4(2-4)

The application of scientific principles to food preparation and preservation. (Prerequisistes: Chemistry 102 or 105, or concurrent)

131. Elementary Food Preparation.

Credit 4(2-4)

A course designed to create an understanding of the basic techniques used in food preparation and to develop skill in using these procedures in production of standard products.

133. Family Food.

Credit 3(2-2)

A study of the application of elementary principles of nutrition and cookery to the planning, preparation, and serving of simple meals designed to meet the needs of all family members.

236. Introduction to Food Science.

Credit 3(2-2)

A study of the chemical and physical properties of components of basic raw foods and behavior of the components during processing and storage. (Prerequisites: Chemistry 105, 115, or 222, 224).

331. Meal Management.

Credit 2(1-2)

Consideration of the management of human and physical resources in the planning, preparing and serving of meals to meet the needs of families of varying sizes, incomes and ages. (Prerequisite: Home Economics 130 or 131)

332. Cultural Aspects of Food.

Credit 2(2-0)

A study of the influence of cultural and socio-economics factors on food patterns and nutritional status of selected ethnic groups.

337. Introduction to Human Nutrition. (Also Food Science 337)

Credit 3(2-2)

An introductory approach to the principles of nutrition as they relate to human requirements for food nutrients; significance and mechanism through which nutrients meet these biological needs during life cycle. (Prerequisites: Chemistry 105, 115 or 222, 224 and Biology 461)

338. Diet Therapy

Credit 3(2-2)

A study of dietary modifications necessary in the treatment of pathologic conditions. (Prerequisite: Food and Nutrition 337)

344. Institution Organization and Management I.

Credit 3(3-0)

A study of the organization, management and administration of food service establishments.

345. Institution Organization and Management II.

Credit 3(3-0)

A continuation of Food and Nutrition 344 with emphasis on personnel management.

346. Institution Purchasing.

Credit 3(2-2)

A study of the problems involved in the purchase of food and other expendable supplies for food service establishments.

439. Child Nutrition

Credit 3(3-0)

A course designed to study the nutritional influence on the growth and development of humans through adolescence with emphasis on the interpretation of relevant research. (Prerequisite: Food and Nutrition 337)

447. Institution Equipment.

Credit 5(3-4)

A study of the selection, care and use of equipment for quantity food preparation and service. Interpretation of blueprints and specifications will be considered.

448. Quantity Cookery.

Credit 4(1-6)

The application of the principles of cookery to the preparation and service of food for group feeding with emphasis on menu planning, work schedules, cost and portion control. (Prerequisite: Food and Nutrition 130)

535. Nutrition Education.

Credit 3(3-0)

A course designed to assist in the development of nutrition education programs in the school and community.

540. Geriatric Nutrition.

Credit 2(2-0)

A study of the application of principles of nutrition in relation to body changes in the elderly citizens. (Prerequisite: Food and Nutrition 337)

544. Field Experience in Food Administration

Credit 3(0-6)

Individualized experiences in off-campus food service establishments.

549. Advanced Quantity Cookery.

Credit 3(2-2)

Continuation of Food and Nutrition 448.

Advanced Undergraduate and Graduate

630. Advanced Nutrition.

Credit 3(3-0)

Intermediate metabolism and interrelationships of organic and inorganic food nutrients in human biochemical functions. (Prerequisites: Food and Nutrition 337 and Chemistry 251, 252 or equivalent)

631. Advanced Food Science.
(Also Food Science 631)

Credit 3(2-2)

Advanced discussion and experimentation with the chemical and physical changes of food during processing and storage. (Prerequisite: Food and Nutrition 436 or equivalent)

632. Food and Nutrition in Early Childhood.

Credit 3(3-0)

A study of the elementary principles of nutrition and their influence on the growth and development of children. Special consideration is given to nutrition education techniques to be used with children and parents in preschool centers and elementary schools.

635. Introduction to Research Methods in Food and Nutrition

Credit 3(0-6)

Laboratory experiences in the use of methods applicable to food and nutrition research. (Prerequisite: Consent of the Instructor)

636. Food Promotion.

Credit 4(1-6)

A course which gives experiences in the development and testing of recipes. Opportunities will be provided for demonstrations, writing and photography with selected businesses.

637. Special Problems in Food and Nutrition.

Credit 3(0-6)

Individualized research on a selected problem in food or nutrition. (Prerequisite: Food and Nutrition 635)

645. Special Problems in Food Administration.

Credit 2(0-4)

Individual work on special problems in food administration.

646. Readings in Food Administration.

Credit 1(1-0)

A study of food administration through reports and discussion of articles in current trade periodicals and scientific journals.

647. Seminar in Food Administration.

Credit 1(1-0)

Discussion of problems involved in the organization and management of specialized food service areas.

Graduate

730. Nutrition in Health and Disease.

Credit 5(3-4)

Significance of nutrition in health and disease. Consideration of: (1) the methods of appraisal of human nutritional status to include clinical, dietary, biochemical, and anthropometric techniques, (2) various biochemical parameters used to diagnose and treatment of the disorders, and (3) the role of diet as a therapeutic tool. (Prerequisite: Food and Nutrition 630 or equivalent)

733. Nutrition During the Growth and Development. Credit 3(2-2)

Nutritional, genetical and environmental influences on human growth and development. (Prerequisite: Home Economics 603 or equivalent)

734. Nutrition Education.

Credit 3(2-2)

Interpretation of the results of nutrition research for use with lay groups. Preparation of teaching materials based on research for use in nutrition education programs.

735. Experimental Foods.

Credit 4(1-6)

Objective and subjective evaluation of food; development and testing of recipes; experimentation with food. (Prerequisite: Food and Nutrition 436 or equivalent)

736. Research Methods in Food and Nutrition.

Credit 4(2-6)

Experimental procedures in food and nutrition research; care of experimental animals; analysis of food, body fluids, animal tissues. (Prerequisites: Analytical Chemistry and Biochemistry)

738. Food Testing and Evaluation.

Credit 3(2-2)

A study of factors affecting the color, flavor, odor and texture of food through the use of subjective and objective testing methods. (Prerequisite: Food and Nutrition 436 or equivalent)

739. Thesis Research.

Credit 3(0-6)

Research problems in food or nutrition.

740. Community Nutrition.

Credit 3(3-0)

(Individualized work or team teaching or guest speakers)

Application of the principles of nutrition to various community nutrition problems of specific groups (geriatrics, preschoolers, adolescents and expectant mothers). Evaluation of nutrition programs of public health and social welfare agencies at local, state, federal and international levels.

741. Current Trends in Food Science.

Credit 3(3-0)

Recent developments in food science and their implications for teachers, nutritionists, extension workers, and dietitions.

742. Cultural and Social Aspects of Food and Nutrition. Credit 3(3-0)

Sociological, psychological, and economical background of ethnic groups and their influence on food consumption patterns, and nutritional status.

743. Food Preservation.

Credit 3(2-2)

A study of current methods of preserving foods—canning, freezing, dehydration, radition and fermentation. (Prerequisite: Food and Nutrition 436 or equivalent)

744. Seminar in Food and Nutrition.

Credit 2(2-0)

(Required of all graduates in Food and Nutrition.)

745. Practicum in Food or Nutrition.

Credit 3(0-6)

Field experiences with private or public agencies.

746. Internship in Home Economics Education.

Credit 6(0-12)

Internship in Home Economics Education is required of any person who has not had previous teaching experience. Internship must include an extended period of involvement in a school's program during a regular school term. Internship will provide opportunity for participation in the total school program including, curriculum, work with teachers, administrators, students and parents.

Courses in Child Development

Undergraduate

311. Child Development I.

Credit 3(3-0)

A study of the child's sequential development at different stages—conception through late childhood. Laboratory observation required.

312. Child Development 312.

Credit 3(3-0)

A comprehensive study of the physical, mental, and psychological factors of development for the late childhood through adulthood. Observation required. (Prerequisite CD 311)

315. Introduction to Child and Family Development Credit 3(2-2)

A study of the historical background and present day philosphies of child development and programs for young children. Laboratory observation and participation required.

414. Materials, Methods and Evaluation I

Credit 3(2-2)

Materials, methods, and evaluations used in the development of cognitive, affective, and psychomotor behaviors. Focus areas: Language Arts, Creative and Dramatic Arts. Laboratory experiences required. (Prerequisite CD 311)

415. Materials, Methods and Evaluation II.

Credit 3(2-2)

Materials, methods, and evaluation used in the development of cognitive, affective, and psychomotor behaviors. Materials, equipment, and their uses in a functional school environment will be explored. (Prerequisite CD 414, 415)

416. Play Materials and Equipment for the Preschool Child

Credit 3(3-0)

The importance of play in all aspects of child development as related to cognitive, affective, and psychomotor behaviors. Materials, equipment, and their uses in a functional school environment will be explored. (Prerequisite CD 414, 415)

417. Parent Education

Credit 2(2-0)

Parental interaction in the child's development at home, in the school, and in the community. The effective use of assistance and volunteers in the school environment.

418. Curriculum in Preschool Education

Credit 3(3-0)

Curriculum planning, the integrated day, scheduling, room arrangement and the classrom environment. (Prerequisite CD 414, 415, 416)

420. Day Care Services.

Credit 3(3-0)

A study of the organization, administration, operation and licensing of day care services. Community personnel, services and facilities will be incorporated in the study of current issues related to day care. Field observation required. (Prerequisite CD 311)

519. Practicum in Nursery School.

Credit 3(1-4)

Practice teaching with a group of preschool children. Prerequisite CD 414, 415, 416, 418).

612. Senior Seminar.

Credit 2(2-0)

A review of recent research findings and discussions of current trends and information related to young children.

Graduate

715. Special Problems in Child Development.

Credit 3(3-0)

Opportunity for students to work individually or in small groups on child development problems of special interest. Work may represent either survey of a given field or intensive investigation of a particular problem. The student should consult the instructor before registering for this course.

Courses in Home Economics Education

Undergraduate

101. Introduction to Home Economics

Credit 1(1-0)

A course designed to assist students in making personal adjustments to college living; an introduction to the broad areas of home economics; a study of the home economics curricula and professional opportunities in the field.

104. The Individual and His Family.

Credit 2(2-0)

A study of the interrelationships of the individual and his family throughout the life cycle with emphasis on health as it is related to the well-being of the family.

105. Social Usage.

Credit 1(1-0)

A course intended for the person who desires to enrich living with graciousness and accepted standards in our present day society.

200. Introduction to Home Economics Education.

Credit 2(2-0)

Historial background, philosophy and objectives of education in the United States; educational, social and political movements affecting Vocational Education in the public schools with emphasis on the requirements of North Carolina.

300. Program Planning in Home Economics K-12

Credit 3(3-0)

Planning home economics programs for occupational education in public schools K-12. (Career awareness, middle school, exploratory, comprehensive occupational home economics, youth and adult programs).

301. Health and Home Nursing.

Credit 2(2-0)

Principles and attitudes in home care of the sick, the handicapped, and the aged; prevention of illness and promotion of health, prenatal care; prevention of home accidents.

323. Home Furnishings Laboratory.

Credit 3(1-4)

Construction for the home, including draperies, shades, curtains, cornices, valances, swags, slipcovers, lampshades, bedspreads, etc.

324. Fundamentals of Needle Craft.

Credit 3(1-4)

Instruction in various crafts and hobbies, including crocheting, knitting macrame and needlepoint.

400. Contemporary Housing.

Credit 3(2-2)

A study of problems in house planning to meet family needs. Emphasis is placed on the study of house designs, methods of financing and location.

401. Marriage and Family Relations.

Credit 3(3-0)

A study of the interpersonal relationships in contemporary family life; emphasis on the changing nature of family adjustments, goals, values and roles.

403. Consumer Problems.

Credit 3(3-0)

Basic principles involved in managing personal and family fiances with emphasis on buying and consumption practices.

500. Occupational Home Economics.

Credit 3(1-4)

Organization and administration of occupational wage-earning programs at the upper high school level—methods and instructional media. Work experiences required in at least one area of a home economics occupational cluster.

502. Household Equipment.

Credit 2(1-2)

The application of principles and techniques relating to selection, care and use of household equipment.

503. Interior Design.

Credit 2(1-2)

A study of residential interiors with emphasis on art principles and their relationship to furniture styles and accessories in decorating the home.

504. Home Furnishings.

Credit 2(1-2)

A study of the problems in home furnishings with emphasis on the selection, care, use and practical ways of making the home attractive.

505. Home Management Residence.

Credit 3(1-4)

Designed to give students experiences in applying the principles of management and interpersonal relations to group living. (Prerequisites: Home Economics 403 and Food and Nutrition 331 or concurrent)

Advanced Undergraduate and Graduate

602. Adult Education in Home Economics.

Credit 3(3-0)

An overview of adult homemaking education: organization, program planning, teaching techniques and evaluation. Laboratory experience will be provided by working with out-of-school groups.

603. Special Problems in Home Economics I.

Credit 3(1-4)

Problems in the various areas of home economics may be chosen for individual study.

604. Seminar in Home Economics Education.

Credit 2(2-0)

Consideration of problems resulting from the impact of social change on the various fields of home economics, review of research and professional development.

605. Home Economics Summer Study Abroad.

Credit 6(0-12)

A course designed to provide opportunity for students and specialists to study historic and contemporary points of interest abroad. Exposure to customs, cultures and industries in an international setting will provide the basis for broader background and experience in selected areas of home economics.

Graduate

706. Special Problems in Home Economics II.

Credit 3(3-0)

A study of research and major contemporary issues with consideration of their impact on trends and new directions in home economics.

Courses in Food Science and Technology Program

Undergraduate

135. Food and Man's Survival (also Food and Nutrition 135)

Credit 3(3-0)

Acquaint students with most common information regarding foods, nutrition and health, with attempts to dispel misconceptions about food properties and factors affecting the quality of foods. Areas of discussion include man's struggle for foods; chemical additives and food safety; modern food preservation, organic and health foods; nutrition and the consumer.

236. Introduction to Food Science (also Food and Nutrition 236)

Credit 3(2-2)

A student of the chemical and physical properties of components of basic raw foods and behavior of the components during processing and storage. (Prerequisites: Chemistry 105, 115, or 222, 224.)

337. Introduction to Human Nutrition (also Food and Nutrition 337)

Credit 3(2-2)

An introductory approach to the principles of nutrition as they relate to human requirements for food nutrients; significance and mechanism through which nutrients meet these biological needs during life cycle. (Prerequisites: Chemistry 105, 115, or 222, 224 and Biology 461)

338. Regulatory and Quality Standards (also Animal Science 338)

Credit 3(2-2)

Principles of quality control. Functional aspects of industrial quality control and the food regulatory agencies. Review of existing regulatory codes and the development of statistical quality control sampling plans.

340. Milk and Milk Products (also Animal Science 409)

Credit 3(2-2)

A study of the chemical and physical properties of milk and the principles involved in the manufacture of specific dairy products such as ice cream, cottage cheese, and butter.

401. Meat and Meat Products (also Animal Science 401)

Credit 3(2-2)

The study of the principles and practices involved in processing meat and meat products as they relate to beef, pork, and lamb and their products. Factors affecting quality, palatibility, and consumer selection will also be studied.

522. Food Engineering (also Animal Science 522)

Credit 3(2-2)

Fundamentals of heat transfer, fluid flow, refrigeration, evaporation and other unit operations in the food processing industry. Application of engineering principles and concepts to the processing of foods. Prerequisite: Physics 201 or 225.

536. Food Plant Management (also Animal Science 536)

Credit 2(1-2)

Organization and management of food plants. Procurement of raw material supplies, plant layout, equipment for plants, distribution of products, costs of operation and record keeping.

541. Food Packaging (also Animal Science 541)

Credit 2(2-0)

Characteristics of packaging materials, strength, elasticity, permeability, food packaging machines, adhesives, as related to product wholesomeness and package design as a form of advertising. Prerequisite: Chem. 102 or 107.

547. Cooperative Training in Industry II (also Food and Nutrition 547)

Credit (1-3)

The description of this course is the same as Food and Nutrition 437, and is normally the second Co-op experience of the student.

556. Poultry Products

Credit 3(2-2)

(also Animal Science 556)

Methods of killing, dressing, grading and storage of poultry meats and the grading and storage of eggs: transportation of poultry products and factors influencing price.

Advanced Undergraduate and Graduate

618. Food Technology Seminar (also Animal Science 618)

Credit 1(1-0)

A review and discussion of selected topics and recent advances in the fields of animal and food science. Prerequisite: Senior standing.

629. Special Problems in Dairy Management Credit 3(3-0) (also Animal Science 629)

Special work in problems dealing with dairy production. Prerequisite: Senior standing.

631. Advanced Food Science (also Food and Nutrition 631)

Credit 3(3-0)

Advanced discussion and experimentation with the chemical and physical changes of food during processing and storage. (Prerequisite: Food and Nutrition 436 or equivalent)

635. Food Analysis
(also Food and Nutrition 635)

Credit 3(1-4)

Fundamental chemical, physical and sensory aspects of food composition as they relate to physical properties, acceptability and nutritional value of foods. Prerequisite: Chem. 102 and Food Technology 236.

637. Special Problems in Food Nutrition and Food Science Credit 3(0-6) (also Food and Nutrition 637)

Independent study and/or research with a staff member in the areas of Food Science and Food and Nutrition. Prerequisite: Junior, Senior, or Graduate standing, and consent of the instructor.

643. Food Preservation
(also Food and Nutrition 643)

Credit 3(2-2)

Harvesting, assembling and receiving of food materials, major unit operation and current methods of preserving foods including canning, freezing, dehydration, radiation and fermentation. Prerequisite: Chemistry 101 and Food Science 236.

647. Cooperative Training in Industry III (also Food and Nutrition 647)

Credit (1-6)

The description of this course is the same as Food and Nutrition 437, and is normally the third Co-op experience for the student.

COURSES IN INDUSTRIAL EDUCATION

Undergraduate

Crafts

210. Industrial Crafts.

Credit 2(1-3)

Fundamentals of materials, tools and skills used in various industrial craft

211. Designing, Carving and Stamping Leather Craft. Credit 2(1-3)

Fundmentals of materials, tools and skills used in leather craft.

218. Repair and Maintenance of Home Furniture. Credit 2(1-3)

A course designed to help homemaking teachers meet specific problems in the improvement and care of home furniture. Instruction in simple upholstery techniques and other processes using tools and accessories for home repair. Finishing and refinishing wood. Students encouraged to make an effort to provide their own work projects.

412. Upholstery—Furniture Construction.

Credit 3(2-6)

Principles and techniques of webbing, springing, stuffing, padding, and covering upholstered furniture. Course includes chair frame construction, principles of woodturning, wood finishing and refinishing techniques.

413. Woodturning.

Credit 2(1-3)

Spindle and face plate turning, re-chucking, plug chucking, finishing and polishing on wood lathes. Emphasis on methods and techniques of teaching woodturning.

415. Comprehensive Shop Projects.

Credit 2(1-3)

General construction, repairs, maintenance work or advanced projects involving woodturning, carving, inlaying, upholstering and wood and metal finishing, metals, electricity-electronics, graphic arts.

510. General Shop.

Credit 2(1-3)

Utilization and organization of multiple activity programs: instructional materials, procedures and operating problems. Student activities in various aspects of industry. Prerequisite: IE 465.

Graphic Arts

130. Graphic Communication Industries.

Credit 2(1-3)

Principles, concepts, and skill in using basic graphic arts equipment. Relief, lithographic, gravure, block, and silk screen printing: including graphic design, process photography, stripping, plate making, presswork, finishing, and binding. Historical, socioeconomical, organizational, and occupational aspects of graphic arts and allied industries are investigated.

230. Introduction to Photography.

Credit 3(1-5)

This course is designed to acquaint the beginner with the fundamental processes of photography. Training is given in the nomenclature, operation and

maintenance of various cameras—the use of exposure meters—film development—contact printing and enlarging—preparation and storage of chemical solutions. Each student is required to provide for himself a camera with adjustable f-stops and shutter speeds.

231. Advanced Photography.

Credit 3(1-5)

This course is a continuation of 230. Emphasis is given to larger cameras—studio lighting—portraiture—copying—refinement of darkroom techniques—spotting of negatives and prints—selection of chemicals and papers. Students showing high competence in both IE 230 and 231 are awarded a Certificate of Proficiency.

233. Industrial Arts Drafting.

Credit 3(1-5)

A course for acquisition of information and development of skills needed by teachers of drafting; Instruction in A.N.S.I. conventions, projections, revolution, developments, lettering and pictorial representation with reference to machine, furniture drawing, sheetmetal drawing, shading, technical sketching, production illustration and industrial arts design. Prerequisite: Mechanical Engineering 101.

234. Industrial Arts Drafting.

Credit 3(1-5)

Continuation of IE 233. Architectural drafting emphasized. Principles and techniques of designing, constructing, and drawing residential buildings. Study of room layouts, traffic patterns, architectural styles. Problems involve plans, elevations, sections, details, and perspective presentation. Prerequisite IE 233.

235. Technical Drafting.

Credit 3(1-5)

Problems involving maps, charts, graphs and electrical drawings. Emphasis on drawings used in design, construction, installation, and maintenance of electric-electronic equipment; schematic, single line, connection and interconnection diagrams; chassis layout, printed circuits, electrical codes and standards. Introduction to aircraft and marine drafting.

430. Technical Illustrations and Design.

Credit 3(1-5)

Survey of design principles, practices and literature. Axonometric illustration, templates, overlays, bisuals, perspectives, air brush.

432. Architectural Drafting.

Credit 3(1-5)

Planning residential structures. Construction and design principles floor, plot, heating electrical, plumbing plans; elevations, sections, details and perspectives. F.H.A. standards, building codes, cost estimates. Problems selected to meet individual needs.

434. Advanced Architectural Drafting.

Credit 3(1-5)

Planning industrial, commercial and public buildings. Construction and

design principles, materials, specifications and codes; complete plans including: plot, landscaping, framing, electrical and mechanical equipment; structural details; reinforced concrete, timber and steel. Advanced perspective rendering, analytical study of historical and contemporary architecture; materials, methods and engineering.

435. Architectural Design.

Credit 3(1-5)

Planning and structural problems of buildings and their relationship to other buildings and space. Studies of urban and rural planning; consideration of interior planning, landscape, townscape, projects carried to working detail.

436. Machine Design Drafting.

Credit 3(1-5)

Advanced machine drawing; dimensions, analysis of motion, motion diagrams. Motion layout of threads; spur, bevel, worm gears and cams. Forging, pattern, piping, welding, structural practice, nomography; auxiliary views, revolutions, pictorial views. A.N.S.I., S.A.E., Aerospace Standards.

536. Tool and Machine Design.

Credit 3(1-5)

Fundamentals of tool design, cutting tools, punches and die design, gage design, jigs and fixtures, indexing and coding procedures. Design, assembly and detail drawings of machines, tools and parts.

Professional

260. Foundations of Industrial Education.

Credit 2(2-0)

An orientation course in industrial education. Course requirements program operation, regulation. Familiarize the student with the underlying philosophy, basic principles, and history of industrial arts and vocational education.

261. Vocational Industrial Education.

Credit 2(2-0)

Planning, organizing, administering, supervising, evaluating and interpreting trade and industrial education programs. Special consideration given to organization and responsibilities of local, state and national agencies.

263. Evolution and Organization of Technology

Credit 3(3-0)

Historical antecedents, trends and future of technology; socio-economic and ecological impact; structure, functions, organization and activities of enterprise, personnel and associations related to industry and technology.

462. School Shop Design & Management.

Credit 2(2-0)

An analysis of general education and industrial education programs and objectives. Emphasis on planning and designing shops, equipment selection and specifications, shop management, maintenance and safety.

463. Career Guidance.

Credit 2(2-0)

Principles and techniques of guidance and counseling in junior and senior high schools. With emphasis on the study of industrial occupations and guidance as it relates to industrial education classes.

465. Instructional Analysis Techniques.

Credit 2(2-0)

Principles and techniques of organizing and supervising industrial safety programs. National, state, and local policies; safety psychology; occupational diseases and hazards. Accident prevention principles including: protective devices, guards, and color codes; identification of hazards, accident analysis and elimination, and other aspects of safety pertinent to industrial personnel and teachers.

555. Industrial Safety Supervision

2(2-0)

Principles and techniques of organizing and supervising industrial safety programs. National, state, and local policies; safety psychology; occupational diseases and hazards. Accident prevention principles including: protective devices, guards, and color codes; identification of hazards, accident analysis and elimination, and other aspects of safety pertinent to industrial personnel and teachers.

566. Industrial Education Teaching Methods.

Credit 3(3-0)

Educational methodology: Lesson planning, group and individual teaching techniques, media development and use, testing and evaluating outcomes in industrial courses. Prerequisites: IE 462, 463, 465.

Observation and Student Teaching—See Education 560.

Courses for Advanced Undergraduate and Graduate Students

616. Plastic Craft.

Credit 3(2-2)

For teachers of industrial arts, arts and crafts, and those interested in plastics as a hobby. Operations in plastics analyzed and demonstrated; design, color, kinds and uses of plastics, how plastics are made and sold; career information. Projects suitable for class use constructed.

617. General Crafts.

Credit 3(2-2)

Principles and techniques of crafts used in school activity programs. Emphasis on materials, tools, and processes used in elementary schools and industrial arts courses. Open to all persons interested in craft instruction for professional or non-professional use.

618. Elementary School Industrial Education Programs. Credit 3(3-0)

Aims, content, equipment, and methods utilized in programs designed to integrate K-6 elementary school activities with the study of industry and technology.

619. World of Construction.

Credit 3(2-2)

Industrial Arts Curriculum Project Workshop encompassing rational, strategies, techniques and media. Prerequisite for middle grade teachers initiating course in the "World of Construction" or "World of Manufacturing."

620. World of Manufacturing.

Credit 3(2-2)

(See 618 course description)

630. Photography and Educational Media.

Credit 3(2-2)

Nomenclature, operation and maintenance of various still and motion picture cameras. The use of exposure meters—film processing—contact printing—slide preparation—film editing—copying—enlarging—preparation and storage of chemical solutions—print spotting—dry mounting.

635. Graphic Arts.

Credit 3(2-2)

Technological, socio-economical, occupational and organizational aspect of graphic arts printing, publishing and allied industries, associated with producing mass media and other visual materials.

660. Industrial Cooperative Programs.

Credit 3(3-0)

For prospective teachers of vocational education. Principles organization and administration of industrial cooperative training programs.

661. Organization of Related Study Materials.

Credit 3(3-0)

Principles of scheduling and planning pupil's course and work experiences, selecting and organizing related instructional materials in I.C.T. Programs. Prerequisite: I.E. 660.

662. Industrial Course Construction.

Credit 3(3-0)

Selecting, organizing and integrating objectives content, media and materials appropriate to industrial courses. Strategies and techniques of designing and implementing group and individual teaching-learning activities to develop interest awareness of specialization. Prerequisites: IE 462, 463, 465.

663. History and Philosophy of Industrial Education. Credit 3(3-0)

Chronological and philosophical development of industrial education with special emphasis on its growth and function in American schools.

664. Occupational Exploration for Middle Grades. Credit 3(3-0)

For teachers of middle grades occupational exploration programs. Emphasis on program implementation, instructional strategies, sources and uses of occupational information, occupational exploration techniques and approaches, philosophy and concepts of introductory vocational education.

Graduate Courses in Industrial Education

These courses are open only to graduate students. See the bulletin of the Graduate School for descriptions.

715. Comprehensive General Shop.	Credit 3(2-2)
717. Industrial Arts Problems I.	Credit 3(3-0)
718. Industrial Arts Problems II.	Credit 3(3-0)
719. Advanced Furniture Design and Construction.	Credit 3(2-2)
731. Advanced Drafting Techniques.	Credit 3(2-2)
762. Construction and Use of Instructional Aids.	Credit 3(2-2)
763. General Industrial Education Programs.	Credit 3(3-0)
764. Supervision and Administration of Industrial Education.	Credit 3(3-0)
765. Testing in Industrial Subjects.	Credit 3(3-0)
766. Curriculum Laboratory in Industrial Education.	Credit 3(3-0)
767. Research and Literature in Industrial Education.	Credit 3(3-0)
768. Industrial Education Seminar.	Credit 3(3-0)
769. Thesis Research in Industrial Education.	Credit 3 hrs.

COURSES IN INDUSTRIAL ENGINEERING

101. Interface to Industrial Engineering Lecture

Credit 2(2-0)

An introductory course for industrial engineering majors. Engineering problem formulation and application of engineering mathematics.

102. Interface to Industrial Engineering Laboratory Credit 1(0-2)

An introductory course for industrial engineering majors. Use of calculators and digital computers as computational aids in the solution of engineering problems. Introduction to FORTRAN. Demonstrations, laboratory and plant visits.

150. Introduction to Industrial Engineering

Credit 3(3-0)

The historical development of engineering and industrial engineering. Introduction to production systems design and control, operations research and systems. Prerequisite: Math 116 or equivalent.

210. Computational Methods in Industrial Engineering Credit 2(0-4)

In depth study of digital computer programming languages, particularly FORTRAN. The use of computer programs for the solution of industrial engineering problems and numerical analyses. Prerequisite: IE 102 or equivalent.

320. Engineering Statistics

Credit 3(3-0)

Engineering statistics and their application to engineering problems. Central tendency, variability, probability, distributions, correlation, regression, sampling and tests of significance. Corequisite: Math 117.

410. Methods Engineering

Credit 3(3-0)

Introduction to the design process and its application to methods design. Motion study, work measurement and introduction to Methods-Time Measurement system. Administration of methods engineering function.

460. Engineering Economic Analysis

Credit 2(2-0)

Interest calculations. Methods of comparative economic analysis such as annual cost, present worth and rate of return on investment. Depreciation, replacement, tax effects and decision tree analysis. Prerequisite: Math 116.

480. Operations Research I

Credit 3(3-0)

Operations research methodology. Linear programming cost models, inventory, queueing theory and dynamic programming. Prerequisite: IE 320 or equivalent.

510. Quality Control

Credit 3(3-0)

Statistical analysis of quality in manufacturing. Acceptance sampling and control charts. Prerequisite: IE 320.

530. Production Control

Credit 4(4-0)

Organization and functions of production control. Forecasting techniques. Inventory analysis and modeling project planning techniques. Prerequisites: IE 210, 320, and 480 corequisite.

550. Facilities Planning and Design

Credit 3(2-3)

Plant location methods, total process analysis, process integration, materials handling analysis, and traditional and computerized plant layout methodologies. Prerequisites: IE 410, 480, 510, and 530.

Courses numbered 600 and above may be taken as electives by students classified as seniors.

640. Advanced Engineering Economy

Credit 3(3-0)

Review of traditional methods of analysis, replacement analysis. Capital planning and budgeting. Risk and uncertainly methodologies. Decision tree analysis. Multiple criteria analysis.

Prerequisites: IE 460 or consent of instructor.

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650. Operations Research

Credit 3(3-0)

Management decision making, queuing theory, probability and statistics, formulation of mathematical models of processes with orientation to optimizing by use of digital computers. Prerequisite: IE 320, IE 480.

658. Project Management and Scheduling

Credit 3(3-0)

Project scheduling with CPM and PERT. Scheduling within resource constraints. Cost scheduling. Cost estimation with emphasis on learning curves. Assembly line balancing. Introduction to theory of sequencing/scheduling with applications of priority rules and heuristic methods. Prerequisites: IE 320 or consent of instructor.

660. Selected Topics in Engineering

Credit Variable (1-3)

Selected engineering topics of interest to students and faculty. The topics will be selected before the beginning of the course and will be pertinent to the programs of the students enrolled.

Prerequisites: Consent of instructor.

662. Reliability

Credit 3(3-0)

Review of probability theory; combinatorial reliability; catastrophic failure models; system reliability; reliability improvements; statistical parameter and interval estimation for reliability functions.

Prerequisites: IE 320 or consent of instructor.

664. Safety Engineering

Credit 3(3-0)

History. Legislation. Engineering safety analysis. OSHA (i.e., Occupational Safety and Health Act). Safety program organization and procedures. Prerequisites: Senior standing in engineering or consent of instructor.

666. Special Projects

Credit Variable (1-3)

Study arranged on a special engineering topic of interest to student and

faculty member, who will act as advisor. Topics may be analytical and/or experimental and encourage independent study.

Prerequisite: Consent of instructor.

669. A Survey of Operations Research Methodologies Credit 3(3-0)

Classical optimization. Generalized linear programming. Assignment technique. Transportation technique. Queueing. Dynamic programming. Prerequisites: Math 117 or consent of instructor.

678. Engineering Management

Credit 3(3-0)

A brief review of engineering management history and its relationship to industrial engineering, operations research, management science and technical engineering disciplines. Planning, organizing, staffing, directing and controlling in an engineering environment.

Prerequisites: Senior standing in engineering or consent of instructor.

COURSES IN INDUSTRIAL TECHNOLOGY

I.T. 190 Introduction to Industrial Technology & Construction (Formerly 210)

Credit 2(1-1)

An introductory course to the world of modern industrial technology including a brief history of construction processes and related technology. It will involve the acquisition and processing of natural materials, and how they are molded into the several types of structures.

I.T. 191 Industrial Technology Processes (Formerly 272)

Credit 2(2-0)

An introduction to typical problems encountered in Industrial Technology operations including metal manufacturing, power technology, electronics, and construction. The use of the slide rule as an aid in problem solving is emphasized.

I.T. 293 Power Technology (Formerly 253)

Credit 3(2-4)

Instruction is designed to make the student aware of energy sources de-

^{*} See Advanced Undergraduate (600-699) Course offerings under the Master of Science in Industrial Engineering on page 510.

veloped for the modern technological world. Specific instruction is related to basic concepts of power sources. The three methods of transmitting and controlling power, mechanical, fluid and electrical. Instruction will culminate, with the integration of all aspects of power to develop automated systems for production.

I.T. 294 Electricity and Electronics (Formerly 230)

Credit 3(1-5)

A study of electron theory, fundamental units of electricity, electromagnetism and their relationship to the power factors found in the basic electronic systems.

I.T. 490 Human Relations (Formerly 410)

Credit 3(3-0)

A study of problems in the work-a-day world which will aid one in getting along with people on the job, in the community and the home. These units of work include: habits one may acquire in order to improve human relations, privileges, rights and obligations of a citizen, obtaining and holding a job, labor problems, social and commercial insurance and the use of leisure time.

I.T. 491 Mechanics of Materials (Formerly 575)

Credit 3(0-6)

A study of physical properties of common materials of industry. Simple stresses, loads, yield strength, ultimate strength, and factors of safety. Applications are made in the areas of riveted and welded joints, pressure vessels, and beam design.

I.T. 492 Communicating Technical Specifications Credit 2(2-0) (Formerly 411)

This course includes industrial contracts, specifications, codes and other statutory regulations, bidding, technical relations and coordinating plans with engineers in the areas of Industrial Technology.

I.T. 493 Industrial Plant Planning & Management Credit 3(2-2) (Formerly 476)

The principles and techniques of plant layout as applied to modern industry. Problems involved in planning new, remodeling old, and expanding present industrial facilities that may better serve their intended purposes. Emphasis is on the roles of management, materials, and machinery.

I.T. 495 Dimensional Metrology Quality Control Credit 3(2-2) (Formerly 474)

A basic course in the history of measurement, the science of measurement and the language. Modern practices emphasized.

I.T. 496 Electro-Mechanical Control Systems (Formerly 479)

Credit 3(3-0)

A general study of electro-mechanical control systems and components used to control and monitor machines and other automatic systems. Lectures and demonstrations on modern concepts will be a part of the course.

I.T. 497 Co-Operative Training in Industry I (Formerly 477)

Credit 4

Students must be in industry full-time for one semester in his major field of work and complete any University Co-Op requirements. He will be evaluated on reports from industry and the University Co-Op Coordinator. The hours earned will be credited toward required technical electives in the Industrial Technology Curriculum. Four semester hours credit is the maximum to be earned under this arrangement in any one semester. Eight semester hours is the maximum to be earned in the Co-Op arrangement in the Industrial Technology Department.

I.T. 498 Co-Operative Training in Industry II (Formerly 478)

Credit 4

The description of this course is the same as I.T. 497 and is normally the second Co-Op experience of the student.

I.T. 591 Industrial Economics

Credit 3(3-0)

This course is designed, specifically for the Industrial Technologist, to equip the student to understand and work with the economic factors encountered at the entry level of industry. Money, etc., also judging both proposed, present worth and interest, profit, etc. Also judging both investments and endeavors as well as techniques for economic studies will be pursued.

I.T. 592 Project Management

Credit 3(3-0)

An introduction to industrial management with emphasis on planning, organizing, and controlling industrial project development. The course will include materials control and storage, purchasing, quality control, sales and personnel administration.

I.T. 593 Industrial Safety (Formerly 413)

Credit 3(3-0)

This course is designed for majors in Industrial Technology, whose content focuses on the functions of Industrial Safety and the utilization of OSHA requirements.

I.T. 596 Electro-Mechanical Control Systems (Advanced) Credit 4(2-4) (Formerly 480)

An advanced course in electro-mechanical control systems. An in-depth

study will be made of hydraulic, pneumatic, switching circuits, electricelectronics and mechanical devices used in the control of machines and processes. The course will consist of lectures, demonstrations, problems solving, and laboratory practice.

I.T. 599 Independent Study (Formerly 576)

Credit 3(0-6)

The student selects a technical problem in his major area for special research and study in consultation with a faculty member in his area of interest. He will spend a minimum of 6 hours per week in library research or laboratory experimentation. A technical report in standard format will be required for completion and must be approved by two department faculty members. Prerequisites: Junior or Senior Status.

TECHNICAL OPTIONS IN INDUSTRIAL TECHNOLOGY

Automotive

I.T. 254 Automotive Fundamentals

Credit 4(2-4)

A study of the evolution and the latest automotive engine designs. Emphasis on operating principles and fundamental concepts of physics, chemistry and electricity related to engine operating systems.

I.T. 255 Automotive Power Transmission

Credit 4(2-4)

A study of fundamental principles of the automobiles power train components. Emphasis on mechanical and fluid power principles of transmitting power and the controlling components brake, steering and etc.

I.T. 451 Automotive Instrumentation & System Analysis Credit 4(2-4)

An introduction to automotive instrumentation and environmental controls. Emphasis is on presenting the anatomy and functions of automobile systems and their effect on the environment, with specific praxiology of modern test instruments for systems malfunctions diagnostics and corrections.

I.T. 452 Automotive Service Management Prerequisites: I.T. 254, 255, 451

Credit 4(2-4)

An introduction to automotive management full service concepts. Emphasis is on the application of management skills, techniques, methods of problem solving for efficient and effective management and marketing controls.

Construction

I.T. 215 Introductory Processes for Construction Projects Credit 4(2-4)

A basic course on the important procedures and planning necessary to initiate construction projects. Included are such things as site selection and soil testing and site preparations, earth moving and stabilizing earth for construction. Studies are made in equipment and materials used in this construction.

I.T. 216 Methods and Materials of Construction Credit 4(2-4)

This is a study of construction systems as they relate to residential and commercial construction. Building materials used in construction will be studied and evaluated.

I.T. 217 Construction Estimating

Credit 4(4-0)

This course is designed to enable the student to gain competency in estimating the amount of materials, time, labor, and equipment required to complete construction projects. A practical approach is made of the procedures used in estimating processes to simplify preparation of formal estimates.

I.T. 412 Mechanical Systems for Building

Credit 2(2-0)

The basic principles and advanced practices in the selection, installation, operation and maintenance of equipment in the general areas of water supply and sanitation.

I.T. 413 Principles of Construction Management

Credit 3(3-0)

Concepts of the construction industry including the contracting, financing, bidding, planning, organizing, coordinating and controlling functions and techniques. Junior and Senior standing.

I.T. 414 Methods in Plane Surveying

Credit 3(1-2)

A study in determining the positions of points on the earth's surface in relation to each other, including linear and angular measurement in the field. The information thus obtained will be in such a form that it will be readily used for calculations, written descriptions, plotting maps and profiles—need trigonometry.

I.T. 415 Finishing Construction Projects

Credit 4(2-4)

This is a course in the final phases of typical construction projects, including exterior and interior trim, painting and decorating, installing accessories, completing the site, landscaping, transfer and servicing procedures.

Electronics

I.T. 231 Electronic Circuits Systems

Credit 3(1-5)

This course emphasises the analyzation of schematic diagrams of a.m., f.m., radar sonar, communication, navigational and transmission systems.

Prerequisite: I.T. 230.

I.T. 234 Electronic Instrumentation

Credit 3(3-0)

An analytical study of electronic instruments such as V.O.M., V.T.V.M., impedence meters, V.U. meter, signal generator, signal tracers, simulators, analog computer meters, spectrophotometers and oscilloscopes with emphasis on electronic analyzation and research.

I.T. 235 Semi-Conductor Electronics

Credit 3(3-0)

This is a general course in solid state theory. It includes the study of semiconductor physics, zener silicon, and photo-transistors as they are related to electronic circuits.

I.T. 430 Electronic Computer Amplifiers (Formerly 431)

Credit 3(3-0)

This course is designed to cover industrial computer amplifiers, audio frequencies and magnetic power amplifiers in R.F., V.H.F. systems.

I.T. 431 Video Electronics (Formerly 430)

Credit 3(3-0)

A study of deflection signals, amplifiers, synchronization systems, integrating networks, microwave, facsimile, R.F. high voltage, pulse circuits monochrome networks in video transmitters and receive systems. Prerequisite: I.T. 235

I.T. 432 Electronic Communication

Credit 3(3-0)

The theory of electronics utilized in commercial communication systems with the fundamental regulation of the F.C.C. First and second class licenses with emphasis on A.M., C.V., F.M., broadcast microphone, recorders, and tape machines, remote facilities, F.M., T.V. transmitters and monitors. Prequisite: I.T. 431.

I.T. 433 Industrial Electronic Control Systems (Formerly 434)

Credit 3(2-2)

A study of combined control systems utilizing A.C. and D.C. control thyratrons, three phase rectification, phase shift breaking transformers, motorspeed controls, I.C. circuit, microwave and frequency guidance systems.

I.T. 434 Management in the Electronic Industry

Credit 3(3-0)

A course covering the principles of organization of resources in hard and software methods, production and marketing of the electronic industry.

MANUFACTURING

I.T. 472 Manfacturing Processes - Production I

Credit 4(2-4)

Basic manufacturing techniques with machine tools and precision measuring instruments. Emphasis is placed on the basic machine tool including the lathe milling machine and sharper. Related technical knowledge and new trends in the manufacturing process are covered included numerical control, chemical milling, etc.

I.T. 473 Manufacturing Processes - Production II Credit 4(2-4)

A study of plastics and other materials and their use in modern Manufacturing Processes. Tooling, fabrication methods, and physical properties required production equipment, etc.

I.T. 480 Mechanical Design and Manufacturing Problems Credit 4(2-4) (Formerly 570)

A basic course in mechanical design and procedures and problems of manufacturing. Some recent advances are covered including critical path scheduling and main machine relations. Prerequisites: I.T. 473, 475.

I.T. 481 Manufacturing Processes (Metallurgy) (Formerly 475)

Credit 4(3-2)

A basic course in metallurgy consisting of a study of raw materials, ferrous and non-ferrous metals and their manufacture. Basic applied metallurgy operations.

I.T. 570 Environmental Controls, A.C. and

Credit 4(2-4)

Heating Systems (Formerly 571)

A study of principal equipment, design, load calculations for cooling and heating layouts and controls employed in various types of systems. This course is augmented by a practical design problem.

I.T. 571 Commercial Refrigeration, Heating, and Credit 4(2-4)

Ventilation (Formerly 572)

A study of steam systems, hot water systems, warm air systems and electrical systems used in heating buildings. Load calculation for walk-in cooler and deep freezer and drinking water fountains. Special refrigerating devices and applications.

I.T. 576 Manufacturing-Production and Operation Management

Credit 4(4-0)

Production and operations function; facilities planning, forecasting future demands. Determination of factor-of-production requirement, material handling.

Industrial Technology Service Courses

I.T. 213 Wood Technology

Credit 3(2-6)

A study of woods, forest products, tools, and equipment related to the wood-working industry. Attention is given to the practical, natural and industrial characteristics of the common species of woods that make them desirable for specific manufacturing processes and products. Practicality for home consumption is also given consideration. Fastening devices and adhesives used in the assembly of furniture and other wood products, as well as the various paint materials used in wood finishing are studied. Students will gain experiences by constructing practical wood projects.

I.T. 233 Electrical Systems

Credit 3(2-6)

A course covering the principles of materials, methods, national codes, nomenclature in the electrical industry.

I.T. 251 Small Engine

Credit 2(1-3)

The principles of engine operations, service and maintenance, trouble shooting, adjustments, overhaul and storing of small engines.

I.T. 252 Automotive Car and Engine Care

Credit 2(1-3)

A course designed to study basic car maintenance service and the function and operation of the modern car's electrical and mechanical components.

I.T. 275 Fundamentals of Metal Joining I

Credit 2(1-4)

The basic course of theory and practice is gas welding, brazing, soldering, cutting, fundamentals of electric arc welding.

I.T. 276 Fundamentals of Metal Joining II

Credit 2(1-4)

Continuation of I.T. 275 with emphasis on heliarc welding, spot welding, tig welding and the latest techniques of metal joining, X-ray and testing.

I.T. 455 Auto Body Repairs and Refinishing

Credit 4(2-4)

A basic course in auto body repairs and construction. Modern methods of painting automobiles. Color matching and blending.

I.T. 456 Automobile Body Designs and Repairs

Credit 4(2-4)

A study of auto body designs and decisions on repairs or replacements. Estimating rebuilding cost. Study of facilities and equipment.

I.T. 470 Manufacturing Industries

Credit 3(1-4)

A basic course in metal manufacturing processes involving planning and design and general metals including bench and sheet metal, forging and foundry, basic machine tools operations and finishing.

I.T. 471 Manufacturing Industries (Advanced)

Credit 3(1-4)

Advanced study of machine tool operations, heat treating, inspection and assembly. Simulated assembly lines and mass production techniques.

Advanced Undergraduate and Graduate

673 Advanced General Metals I

Credit 3(2-2)

A course in metalwork for teachers of industrial arts. Emphasis will center on art metal (including plating, finishing, etc.), advanced bench metal, sheet metal operations and machine shop. Specifications for equipment, organization of instruction sheets, special problems and materials will be covered as well as shop organization. Prerequisite: I.T. 471

674 Advanced General Metals II

Credit 3(2-2)

An advanced course in metalwork for the industrial arts teacher or other persons who may require more specialization in one area of metalwork. With the necessary prerequisites, the student may select any area of general metals for concentration and special study. Construction projects, special assignments, etc., will be made after the area of work is selected and after consultation with the instructor. Prerequisite: 673

651 Power Industries and Technology

Credit 3(2-2)

Significance of modern power sources in Industrial Technology. Design and operating principles of steam, water, hydraulic, pneumatic, internal and external combustion units. Nuclear, hydro-electric, gasoline, diesel, turbine rocket, jet, fuel cells, solar energy and other systems. Laboratory experiences involving utilization of power equipment, testing and servicing, with major emphasis on portable power plants.

For Graduates Only

735 Electricity-Electronics

Credit 3(2-2)

For teachers and prospective teachers of Industrial Arts. Emphasis is placed on selection and construction of projects useful in school shops, development of selected information. Selecting equipment and supplies, course organization and instructional materials.

Addendum

COURSES IN INDUSTRIAL TECHNOLOGY

Revised Course Descriptions

210. Construction Technology.

Credit 3(1-5)

Comprehensive study of basic concepts relating to the technical, managerial,

socio-economic, consumer, and occupational aspects of construction industries. Emphasis on: building principles, systems, practices and codes; planning and designing structures; estimating; organizing and scheduling work; buying and selling real estate. Technical experience in site preparation, foundation construction, framing, finishing, roofing, insulation, and utilities installation. Skill development in performing basic tool and machine operations in carpentry, masonry, electric wiring, and plumbing.

213. Wood Technology.

Credit 3(1-5)

Basic concepts relating to the technical, managerial, socio-economic, consumer, and occupational aspects of wood manufacturing industries. Emphasis on advanced cabinet and furniture construction, advanced machine operation and maintenance, and basic wood finishing. Study includes construction principles; characteristics, properties, and utilization of wood and synthetic materials; fabrication techniques of joinery, forming, and laminating; production methods; technological trends; furniture styles and design principles; mass production techniques, jigs, and fixtures.

470. Manufacturing Industries.

Credit 3(1-5)

Comprehensive study of basic concepts relating to the technical, managerial, socio-economic, historical, consumer, and occupational aspects of Manufacturing Industries. Emphasis on manufacturing management and production methods including market, product, materials, and process research, product design and engineering; production planning, tooling and control; raw material conversion; material forming, cutting, shaping, assembly, and finishing. Skills developed in performing basic operations in metal machining, ornamental iron, sheet metal, and welding. Experience provided in organizing and directing industrial-business enterprise.

471. Metals Technology.

Credit 3(1-5)

Advanced study and skill development in performing metal machining, forging, foundry, heat treating, welding, and metal spinning operations. Emphasis on product design and drafting; advanced tool and machine operation and maintenance including turning, drilling, milling, reaming, boring, cutting, grinding, polishing, and finishing metals. Characteristics properties and utilization of ferrous and non-ferrous metals, technological trends and development; and career opportunities in metal industries are studied.

Courses in Landscape Architecture

101. Landscape Architectural Orientation

1(1-1)

Lectures and seminars on the university and the field of Landscape Architecture.

202. Plant Materials I

3(1-4)

Study of plant materials as used in landscape design. Emphasis on trees, shrubs, ground covers, and vines, native or introduced to North Carolina. Prereq: Botany 140.

203. Plant Materials II.

3(1-4)

Continuation of Hort. 202, with different plant species. Prereq: Botany 140.

220. Visual Communication.

2(0-4)

Visual analysis of design elements and forms with emphasis on their function in design; visual analysis of landscape materials, landscape architectural presentation techniques.

230. Environmental Ecology.

3(3-0)

Basic concepts of ecology, eco-system structure and function; designoriented study of the relation between natural systems and constructed systems. Field trips.

240. Basic Landscape Design.

3(2-2)

Lectures and projects which explore the design potential of the environment, develop processes for problem solving and presentive ideas verbally and visually. Design of small sites with simple variables.

310. History of Landscape Architecture.

3(3-0)

A study of the development of landscape architecture from antiquity to modern times, with emphasis on its relation to allied arts and professions.

330. Landscape Architectural Construction I.

4(0-8)

Lecture, exercises and projects in grading and earth volume computations, surface drainage techniques and construction drawings. Prereq: Admission to intermediate program, Math. 112 and L.A. major.

331. Landscape Architectural Construction II.

4(1-6)

Lectures and projects on landscape structures, selection of materials, their use in design, and development of construction drawings. Prereq: L.A. 330.

340. Intermediate Landscape Architectural Design I.

4(0-8)

Design problems involving private; semi-public and public area with emphasis on plan analysis, detail drawing and presentation. Prereq: Admission to intermediate program, L.A. 220 and 240.

341. Intermediate Landscape Architectural Design II.

Continuation of L.A. 340 with concentration on urban problems. Prereq: L.A. 340.

400. Planting Design.

3(3-0)

Fundamentals of design as applied to the use of plant materials, with emphasis on aesthetic, and functional arrangements. Problems will include preparation of planting plans, cost estimates and technical specifications.

410. Professional Practice.

2(2-0)

A study of the professional practice of landscape architecture, including professional ethics and registration laws; the preparation of proposals and contract documents; office administration; job supervisions; and relationship with clients and contrators. Prereq: L.A. major, consent.

420. Seminar

2(2-0)

Individual research, group discussions, and lectures on contemporary issues relating to the practice of landscape architecture. Prereq: Senior L.A. major or consent of instructor.

440. Advanced Landscape Design I.

4(0-8)

In depth study of a comprehensive landscape architectural problems involving existing situations. Research preliminary studies conferences and presentation of recommendations. Prereq: Admission to advanced program. L.A. 341.

441. Advanced Landscape Architectural Design II.

4(0-8)

An approved design problem requiring individual work to serve as a comprehensive examination. Preparation and presentation to include a written and graphic analysis, detailed plans, specifications, cost estimates and model (or other means approved by instructor). Prereq: L.A. 440.

Courses for Advanced Undergraduates and Graduates

601. Environmental Perception and Design Determinants. Credit 3(3-0)

Comprehensive perception of natural forces as design determinants. An assessment of systems and methods of perception, classification, analysis and synthesis of natural forces and elements as they affect physical design and human use. Lecture and workshops will emphasize perception and landscape design.

602. Qualitative Analysis in Landscape Planning

Credit 3(3-0)

Evolution and trends of applied physical design in landscape planning. Investigation of actual hypothetical design situations; study of visual and

cultural values of landscape resources in planned environments. Lectures and practicums of physical design, site capabilities, landscape structuring, and landscape values.

603. Land-Use Planning and Management.

Credit 3(3-0)

A study of human behavioral responses and use patterns within physical environments, with emphasis on special group needs and compatability with landscape resource areas. Consideration of problems affecting a synthesis of landscape values and design forms, visual and psychological values of planned and unplanned environments and relationships of social functions to landscape architectural forms.

604. Factors of Physical Design.

Credit 3(3-0)

A study of human behavioral responses and use patterns within physical environments, with emphasis on special group needs and compatability with landscape resource areas. Consideration of problems affecting a synthesis of landscape values and design forms, visual and psychological values of planned and unplanned environments and relationships of social functions to landscape architectural forms.

COURSES IN MATHEMATICS

Undergraduate

100. Intermediate Mathematics.

Credit 3(3-0)

Elementary properties of real numbers and basic algebra through solving of quadratic equations by various means. Required of students whose mathematics SAT scores are law and whose major curriculum includes either Mathematics 101 or Mathematics 111

*101. Freshman Mathematics I.

Credit 3(3-0)

Numbers and their properties, polynominals, rational expressions, rational exponents, radicals, equations and inequalities in one variable, relations and functions. Prerequisite: A satisfactory score on the mathematics portion of the Scholastic Aptitude Test or Mathematics 100.

*102. Freshman Mathematics II.

Credit 3(3-0)

A continuation of Mathematics 101. Quadratic functions, systems of linear equations, exponential and logarithmic functions, circular functions, trigonometric functions, analytical trigonometry and the binomial theorem. Prerequisite: Mathematics 101.

110. Preparatory Engineering Mathematics.

Credit 4(4-2)

Algebraic properties of the number system, fundamental operations, ex-

^{*} General Education course.

ponents and radicals, functions and graphs, solutions of equations and systems of equations, trigonometric functions and identities, inequalities, logarithms, progressions, mathematical induction, binomial theorem, permutations and combinations. Prerequisites: One unit of high school algebra and one unit of high school geometry.

*111. College Algebra and Trigonometry.

Credit 4(4-0)

Review of basic algebra; first and second degree equations; polynomial and rational functions; systems of equations; inequalities; right traingle trigonometry; and, trigonometric identies and equations. Prerequisites: Mathematics 100 or two units of high school algebra, one unit of high school geometry and a satisfactory score on the mathematical portion of the Scholastic Aptitude Test.

112. Calculus for Non-Mathematics Majors

Credit 4(4-0)

A brief treatment of basic concepts of differential and integral calculus with applications to business, economics, social and behavioral sciences; polynomial, rational, exponential and logarithmic functions. Prerequisite: Mathematics 102, Mathematics 110 or Mathematics 111.

*113. Analytic Geometry and Calculus I.

Credit 4(4-0)

Analytic geometry of lines and circles, functions, limits, continuity, derivatives, applications of the derivative, the indefinite integral and the definite integral. Prerequisite: Mathematics 102, or Mathematics 110 or Mathematics 111.

115. Mathematics of Business and Fianance.

Credit 3(3-0)

A brief review of computing with whole numbers, decimals, fractions, per cent, problem solving and the metric system. Simple interest, discount, partial payments, payroll, wages and commission accounts, discounts and mark-ups, retailing, taxes, distribution of ownership, transactions in corporate securities, insurance, compound interest, annuities, amortization and sinking funds. Prerequisite: Mathematics 101 or Mathematics 110 or Mathematics 111.

116. Engineering Mathematics I.

Credit 5(4-2)

Review of basic principles of preparatory engineering mathematics, analytic geometry, differentiation and integration of functions of one variable, applications of derivatives and integrals. Prerequisite: Mathematics 110 or two units of high school algebra, one unit of high school geometry and one-half unit of high school trigonometry.

117. Engineering Mathematics II.

Credit 5(4-2)

Infinite series, vectors in two-and three-space, analytic geometry of three-space, polar coordinates, partial derivatives and multiple integrals. Pre-requisite: Mathematics 116.

221. Analytic Geometry and Calculus II.

Credit 4(4-0)

A continuation of Mathematics 113. The definite integral, applications of the definite integral, integration by substitution, parts and partial fractions, hyperbolic functions, polar coordinates, conic sections, indeterminate forms and improper integrals. Prerequisite: Mathematics 113.

222. Analytic Geometry and Calculus III.

Credit 4(4-0)

A continuation of Mathematics 221. Infinite series, vectors in two and three dimensions, solid analytic geometry, functions of several variables, partial differentiation and multiple integration. Prerequisite: Mathematics 221.

224. Introduction to Probability and Statistics.

Credit 3(3-0)

A general course covering fundamentals of statistics, central tendencies, variabilities, graphic methods, frequency distributions, correlations, reliability of measures, theory and methods of sampling and the descriptive and analytical measures of statistics. Prerequisite: Mathematics III.

240. Introduction to the Programming of Digital Computers.

Credit 3(3-0)

Flow charts, machine language, e.g. FORTRAN; preparation of cards and tapes, number systems, typical programs for solution on standard computers; mathematical essentials for computer programming, e.g., approximation methods, error functions, iteration schemes and numerical solutions of equations. Prerequisite: Mathematics 102, Mathematics 110 or Mathematics 111.

242. College Geometry.

Credit 3(3-0)

Postulational systems, Euclid's Parallel Postulate, a brief study of non-Euclidean geometries, Euclidean geometry as a special case of other geometries and defects of Euclid's system. Prerequisite: Mathematics 113 or Mathematics 116.

300. Ordinary Differential Equations.

Credit 3(3-0)

Solution of nth order equations, matrices and linear algebra, systems of linear differential equations, applications to mechanical vibrations and electrical circuits and power series solutions. Prerequisite: Mathematics 117 or Mathematics 222.

350. Linear Algebra and Matrix Theory I.

Credit 3(3-0)

An introduction to linear algebra and matrix theory; the algebra of matrices and its application to the solution of systems of linear equations, determinants, real and complex vector spaces, bases, dimension, linear transformations, eigenvalues and eignevectors.

420. History of Mathematics

Credit 3(3-0)

A survey of the development of mathematics by chronological periods with biographical references, illustrations of national and racial achievements and discussion of the evaluation of certain important topics of elementary mathematics. Prerequisite: Mathematics 221.

423. Theory of Equations.

Credit 3(3-0)

Methods of solving cubics, quartics and other algebraic equations; methods of approximating roots; systems of equations; and, elements of determinants and matrices. Prerequisite: Mathematics 222.

440. Numerical Methods.

Credit 3(2-2)

Numerical methods as related to programming techniques, interpolation, extrapolation, approximate solutions of algebraic and transcendental equations, simultaneous linear equations, initial-value, characteristic-value and boundary-value problems, partial differential equations of the hyperbolic, parabolic and elliptic types. Corequisite: Mathematics 440.

500. Introduction to Applied Mathematics

Credit 3(3-0)

Introduction to applied mathematics, Fourier series, Laplace transforms, line and surface integrals, introduction to partial differential equations and complex variables. Prerequisite: Mathematics 300.

505. Seminar in Mathematics.

Credit 1(1-0)

Methods of preparing and presenting seminars, presentation of seminars in current developments in mathematics and/or topics of interest which are not included in formal courses. Required for mathematics majors. Prerequisite: Mathematics 507 or Mathematics 511.

507. Intermediate Analysis I.

Credit 3(3-0)

A rigorous treatment of the fundamental principles of analysis, limits, continity, sequences, series, differentiability and integrability and functions of several variables. Prerequisite: Mathematics 117 or Mathematics 222.

508. Intermediate Analysis II.

Credit 3(3-0)

A continuation of Mathematics 507. Prerequisite: Mathematics 507.

511. Abstract Algebra I.

Credit 3(3-0)

Elementary properties of sets, Peano axioms, the natural number system, properties of the integers, groups, rings, integral domains, fields and vector spaces. Prerequisite: Twenty hours of college mathematics.

512. Abstract Algebra II.

Credit 3(3-0)

A continuation of Mathematics 511 including topics in commutative ring theory, Galois field theory and module theory. Prerequisite: Mathematics 511.

520. Linear Algebra and Matrix Theory II.

Credit 3(3-0)

Vector spaces, properties of finite dimensional vector spaces, linear transformations and matrices, determinants and systems of linear equations, eigenvalues and eigenvectors, diagonalization, inner product spaces and bilinear quadratic forms. Prerequisite: Mathematics 350 or the consent of the instructor.

550. Vector Analysis.

Credit 3(3-0)

Vector and tensor calculus, covariant and contravariant components; integral theorems; applications to geometry, mechanics and electromagnetic theory. Prerequisite: Mathematics 500.

Advanced Undergraduate and Graduate

600. Introduction to Modern Mathematics for Secondary School Teachers.

Credit 3(3-0)

Elementary theory of sets, elmentary logic and propositional systems, nature and methods of mathematical proofs, struture of the real number system. Open only to in-service teachers or to others having the permission of the Department of Mathematics.

601. Algebraic Equations for Secondary School Teachers. Credit 3(3-0)

Algebra of sets, algebraic equations, systems of equations, matrices and determinants with applications, and the elements of vector spaces. Prerequisite: Mathematics 600 or the consent of the Department of Mathematics.

602. Modern Algebra for Secondary School Teachers. Credit 3(3-0)

Sets and mappings, properties of binary operations, groups, rings, integral domains, vector spaces and fields. Prerequisite: Mathematics 600 or the consent of the Department of Mathematics.

603. Modern Analysis for Secondary School Teachers. Credit 3(3-0)

Properties of the real number system, functions, limits, sequences, continuity, differentiation, integration, logarithmic and exponential functions. Prerequisite: Mathematics 600 or the consent of the Department of Mathematics.

604. Modern Geometry for Secondary School Teachers. Credit 3(3-0)

Re-examination of Euclidean geometry, axiomatic systems and the Hilbert axioms, introduction to projective geometry and other non-Euclidean geometries. Prerequisite: Mathematics 600 or the consent of the Department of Mathematics.

606. Mathematics for Chemists.

Credit 3(3-0)

Review of those principles of mathematics which are involved in chemical computations and derivations from general chemistry through physical chem-

istry; topics covered include significant figures, methods of expressing large and small numbers, algebraic operations, trigonometric functions and an introduction to calculus.

607. Theory of Numbers.

Credit 3(3-0)

Divisibility properties of the integers, the Euclidean algorithm, congruences, diophantine equations, number-theoretic functions and continued fractions. Prerequisite: Twenty hours of college mathematics.

608. Mathematics of Life Insurance.

Credit 3(3-0)

Probability, mortality tables, life insurance, annuities, endowments, computation of net premiums, evaluation of policies, construction and use of tables. Prerequisite: Mathematics 224.

620. Elements of Set Theory and Topology.

Credit 3(3-0)

Operations on sets, indexed families of sets, products of sets, relations, functions, metric spaces, general topological spaces, continuity, compactness and connectedness. Prerequisites: Mathematics 117 or Mathematics 222, and the consent of the instructor.

623. Advanced Probability and Statistics.

Credit 3(3-0)

Review of elementary postulates and theorems of probability; probability functions, probability densities, mathematical expectation, moments of special probability distributions, moment generating functions, sampling distributions, decision theory and estimations. Prerequisites: Mathematics 224 and either Mathematics 117 or Mathematics 222.

624. Methods of Applied Statistics.

Credit 3(3-0)

Review of various statistical procedures; applications of normal, binomial, Poisson, chi-square, student's "t" and "F" distributions; analysis of variance, covariance and regression analysis based on available packaged computer programs; factor analysis, discriminant analysis and the analysis of categorical data using linear models. Prerequisite: Mathematics 224.

625. Mathematics for Elementary Teachers, K-8, I.

Credit 3(3-0)

Designed for in-service and prospective teachers who have as their goal "to teach the basic skills and competencies of mathematics sought in today's world." The course emphasizes that the teacher, first, must have the knowledge and skills in order to accomplish this goal. It stresses fundamentals of arithmetic, sets and operations, number systems, fractions, decimals, percents, estimation, consumer arithmetic, problem solving and traditional and metric geometry and measurement. This course may not be used for degree credit.

626. Mathematics for Elementary Teaches K-8, II.

Credit 3(3-0)

A continuation of Mathematics 625 with emphasis on techniques and methods of teaching. Prerequisite: Mathematics 625.

631. Linear and Non-Linear Programming.

Credit 3(3-0)

Optimization subject to constraints, transportation problems, simplex method, network flows, applications of linear programming to industrial problems and economic theory and an introduction to non-linear programming. Prerequisite: Mathematics 350 or the consent of the instructor.

632. Games and Queue Theory.

Credit 3(3-0)

General introduction to game theory. Two-person-zero-sum games, two-person-non-zero-sum non-cooperative games, two-person cooperative games, reasonable outcomes and games and the minimax theorem. Introduction to queuing theory, single server queuing processes, many server queuing processes, and applications to economics and business. Prerequisites: Mathematics 224 and Mathematics 350, or the consent of the instructor.

651. Methods in Applied Mathematics I.

Credit 3(3-0)

An introduction to complex variables and residue calculus, transform calculus (Fourier, Laplace, Hankel and Mellin transforms, etc.), higher order partial differential equations governing various physical phenomena, non-homogeneous boundary-value problems, orthogonal expansions, Green's functions and variational principles. Prerequisite: Mathematics 500 or the consent of the instructor.

652. Methods in Applied Mathematics II.

Credit 3(3-0)

An introduction to integral equations and conversion of differential problems into integral equations of Volterra and Fredholm types, solution by iteration and other methods, existence theory, eigenvalue problems and Hilbert-Schmidt theory of symmetric kernels. Topics in the calculus of variation include optimization of integrals involving functions of more than one variable, Hamilton's principle, Sturm-Liouville theory and the Rayleigh-Ritz method. Prerequisite: Mathematics 500 or the consent of the instructor.

Graduate

The following courses are open to graduate students only. For descriptions of them, see the bulletin of the Graduate School.

700. Theory of Functions of a Real Variable I.	Credit 3(3-0)
701. Theory of Functions of a Real Variable II.	Credit 3(3-0)
710. Theory of Functions of a Complex Variable I.	Credit 3(3-0)
711. Theory of Functions of a Complex Variable II.	Credit 3(3-0)
715. Projective Geometry.	Credit 3(3-0)
717. Special Topics in Algebra.	Credit 3(3-0)
720. Special Topics in Analysis.	Credit 3(3-0)

COURSES IN MECHANICAL ENGINEERING

Department Code-440

Undergraduate

100. Engineering Orientation and Analysis

Credit 3(2-3)

Introduction to engineering and mechanical engineering, engineering opportunities; tools and processes of engineering; applications of trigonometry, geometry, and algebra to engineering problems; introduction to slide rule and digital computer; measurements and experimental techniques, plant visits.

101. Engineering Graphics I.

Credit 3(0-6)

Instrument practice: lettering; geometrical construction; projections; sections; auxiliary projection; revolution; pictorial drawing; intersection and development. Drawings of fasteners, springs and gears; detail and assembly drawings; tracing and reproduction methods.

102. Engineering Graphics II

Credit 3(0-6)

Representation of common geometrical magnitudes, with points, lines, planes, and solids; concurrent noncoplanar forces; the solution of problems; advanced intersection and development. Prerequisite: M.E. 101.

103. Introduction to Graphics Science

Credit 2(0-4)

Instrument and freehand drawing of structures and machine parts, lettering, sectional and auxiliary views, dimensioning, conventional drafting practices.

210. Computational Methods in Engineering

Credit 2(2-0)

. A review of digital computer programming techniques and an introduction to numerical solution methods applicable to engineering problems. Emphasis is placed upon error analysis, evaluations of functions and roots, integral evaluations and solutions to systems of equations. Includes engineering case studies. Prerequisites: M.E. 100 or Math. 240 or equivalent.

226. Manufacturing Processes

Credit 3(2-2)

Fabricating methods by machining, forming, casting, welding and adhesive bonding; measuring and gauging; automation; numerical control of machine tools; economics of metal manufacturing; plastics.

260. Materials Science

Credit 3(3-0)

Fundamental nature of materials, physical, mechanical and chemical characteristics, atomic arrangements and atomic bonding; phase diagrams; properties and engineering requirements of materials; testing and examination, review and selection of materials for specific use. Prerequisite: Consent of Instructor.

300. Plane Surveying

Credit 2(1-3)

The methods of using the compass, transit, tape and level in making plane surveys. Lectures and field work. Elementary stadia work. Prerequisite: Trigonometry. Math. 110 or equivalent.

335. Mechanics I, Statics

Credit 3(3-0)

Basic vector concepts of force, moment of a force; analytical and graphical techniques in the analyses of force and moment; conditions of equilibrium in frames, trusses, machine members under static loads; law of friction; distributed forces; determination of centroid, mass center, area and mass moment of inertia. Prerequisites: Math. 116; concurrent with Physics 221.

336. Strength of Materials

Credit 3(3-0)

Analysis of stress and strain; stress-strain relations; applications; torsional and flexural loadings; flexural deflections; combined loading, columns. Prerequisite: M.E. 335.

337. Mechanics II, Dynamics

Credit 3(3-0)

Introduction to the kinematics of particles and rigid bodies in translation, rotation and plane motion; introduction to the concepts underlying the workenergy principles and impact-momentum principles. Prerequisite: M.E. 335.

346. Material Testing Laboratory

Credit 1(0-2)

Experimental work leading to the study of: Behavior of engineering materials under axial and shear loads; bending loads; combined loads; fatigue and impact loads; time-dependent deformation of materials.

416. Fluid Mechanics

Credit 3(3-0)

Static and dynamic behavior of fluids; applications to fluid machinery, jet propulsion and instrumentation; dimensional analysis and similitude.

426. Fluid Mechanics Laboratory

Credit 3(0-2)

Experimental verification of principles of fluid mechanics; performance testing of pipelines, turbines, fans and pumps; wind tunnel testing of airfoils for drag and lift. Corequisite: M.E. 416.

433. Engineering Topics

Variable Credit 1-3

This course will allow the presentation of topics which will meet the requirements for a Free Elective, but not a Technical Elective. Topics covered are non-recurring, but the course is aimed at a broader audience than M.E. 544. Approval of syllabus and other course details must be secured from the Department Chairman.

440. Kinematics

Credit 3(2-2)

A condensed covering relative motions, velocities and accelerations of machine parts including linkage, cams and gears. Prerequisite: M.E. 337.

441. Thermodynamics I

Credit 3(3-0)

Thermodynamic properties of substances. Development of the first and second laws on a macroscopic system basis. Application to thermodynamic processes involving ideal and real gases. Prerequisites: Math. 300 and Chem. 101.

442. Thermodynamics II

Credit 4(3-3)

A continuation of Thermodynamics I including first and second law of applications to power, heating, and refrigeration cycles. The subjects of gas mixtures, psychrometrics and heat transfer are introduced. Experimental work in thermal sciences. Prerequisite: M.E. 441.

461. Transportation Engineering I

Credit 3(3-0)

The transportation system and development, technological characteristics of transport modes, traffic control devices, planning studies, planning models. Prerequisites: Junior standing or consent of Instructor.

462. Transportation Engineering II

Credit 3(3-0)

Traffic surveys, traffic volume and capacity studies; Designs of land, air, and water transportation facilities; Analysis and Design of urban mass transit systems. Prerequisites: M.E. 461 or consent of Instructor.

474. Engineering Design

Credit 3(2-2)

Survey of techniques to aid engineering design. Short projects will be the vehicles for illustrating various aspects of design. Projects will include: Literature reviews, mathematical-computer simulation, laboratory experiments and design-construction projects. Prerequisites: Math. 300, M.E. 441 and M.E. 336.

540. Dynamics of Mechanical Engineering Systems

Credit 3(2-2)

A unified treatment of mechanical, fluid, and thermal dynamic systems. Emphasis is placed upon the physical characteristics of the systems, mathematical model formulation, exercise of models through modern computational techniques, and correlation of model behavior with that of existing systems. The synthesis and design of systems through model manipulation is covered. Prerequisites: M.E. 562, 442, 440; E.E. 442.

544. Special Topics

Variable Credit (1-3)

A senior level course on topics not covered in other mechanical engineering courses. There is to be a title specified for the course, which indicates the contents. The students records will carry both course number and name. This course will satisfy the requirements for a Technical Elective, and approval of the

syllabus and other course details must be secured from the department curriculum committee.

560. Metals, Ceramics, and Polymers

Credit 3(2-2)

Atomic structure and microstructure; properties of materials; alloying heat treatment and other processing; environmental degradation; engineering uses and design with various materials; experiments of microstructures, heat treatment, mechanical properties, corrosion, oxidation and degradation. Prerequisite: M.E. 226 and M.E. 260.

561. Environmental Control

Credit 4(3-2)

Principles of heating and air conditioning and their applications to design of environmental control systems; determination of building, heating and cooling loads, principal equipment, layout and controls are discussed for various types of systems.

562. Heat and Mass Transfer

Credit 4(3-3)

Relation of heat transfer to thermodynamics. Conduction of heat in steady and unsteady states. Heat transfer by radiation, free and forced convection. Mass diffusion. Experimental work in heat transfer. Prerequisites: M.E. 416 and M.E. 441.

563. Energy Conversion

Credit 3(3-0)

Energy usage and supplies. Analysis of steam and air power cycles, thermoelectric, thermionic, and magnetohydrodynamic conversion processes and fuel cells. Discussion of solar, wind, geothermal and nuclear energy sources. Prerequisite: M.E. 442.

564. Machine Design I

Credit 3(3-0)

Introduction to the design process; the design and development of machine elements; computer-aided design; project work. Prerequisites: M.E. 336 and M.E. 440.

565. Machine Design II

·Credit 3(3-0)

Continuation of the design and development of machine elements; analysis, synthesis and design of machine systems; project work. Prerequisites: M.E. 564 and M.E. 560.

566. Mechanical Vibrations

Credit 4(3-2)

An introduction to the dynamics of systems with and without external damping, stability, lumped and distributed. Vibration isolation mounts and control systems are analyzed with classical differential equations, electromechanical analogies and computer methods. Prerequisites: M.E. 336 and M.E. 337.

567. Experimental Stress Analysis

Credit 3(2-2)

Theory and methods for measuring strain, including strain gages, photoelasticity, and brittle coatings. Prerequisite: M.E. 336.

568. Gas Dynamics

Credit 3(2-2)

Principles of one-dimensional compressible fluid flow. Normal shocks. Flow with friction, heating and cooling. Introduction to two-dimensional flows. Experimental work in fluid flow. Prerequisites: M.E. 416 and 441.

570. Internal Combustion Engines

Credit 3(2-2)

Fundamental principle of spark-ignition and compression ignition engines; the combustion phenomena; the effect of fuel-air mixture; design of components of an internal combustion engine; testing and performance curves; design project. Prerequisites: M.E. 440, 442.

571. Turbomachinery

Credit 3(2-2)

The Cascade theory, applied to turbomachines; impulse and reaction turbines; compressible fluid dynamics, gas turbine principle; pumps, compressor and blowers; design of turbomachine elements, project work. Prerequisites: M.E. 416, M.E. 442.

572. Mechanical Engineering Seminar I

Credit 1(0-2)

Reports and discussion on special topics in mechanical engineering and related fields. Prerequisite: Senior standing in mechanical engineering.

573. Mechanical Engineering Seminar II

Credit 1(0-2)

Continuation of Mechanical Engineering 572. Prerequisite: Senior standing in Mechanical Engineering.

574. Mechanical Systems Analysis

Credit 3(1-4)

Application of the engineering and mathematical techniques in the design of mechanical systems; solution of mechanical engineering problems, or a research activity; Group problems are selected by the students from actual problems in industry and research; Lectures cover an introduction to types of design projects, the design process, decision and optimization techniques, and computeraided design. Prerequisite: Senior standing.

575. Solar Energy Fundamentals and Design

Credit 3(3-0)

Characterization of solar radiation at the earth's surface. Discussion & analysis of solar collectors of both flat plate & concentrating types, storage systems, distribution system & controls. System sizing, design & economic analysis for space heating, water heating & industrial process heat. Prerequisites: M.E. 442 & 562.

COURSES IN MILITARY SCIENCE

MS 101 Introduction of Citizen/Soldier

Credits: 1

An introduction to the mission, organization and history of the ROTC: Military and civilian obligation in relation to National Security; Individual Arms and Marksmanship Techniques Emergency Medical Treatment. Leadership Laboratory training to include thorough indoctrination in military courtesy and customs of the service, drill experience, development of initiative and self-confidence.

MS 102 Introduction to United States Military Forces in Support of National Defense

Credits: 1

A discussion of the mission and responsibilities of the United States Military Forces in Support of National Security with emphasis on the role of the individual participating citizen. Leadership Laboratory is a continuation of MS 101 Laboratory.

MS 201 Branches of the Army and Leadership Principles

Credits: 1

An orientation on each branch of the Army to acquaint students with the job areas available to the ROTC graduate. Additionally an appreciation is developed for the applicability of leadership principles, traits, and techniques in all job areas. Leadership Laboratory training emphasizing the functions, responsibilities, and duties of junior noncommissioned officers with particular attention devoted to the continued development of leadership potential.

MS 202 Map Reading Skill Development

Credits: 1

A detailed study of orienteering to include basic fundamentals of map reading, grid systems, scale and distance, elevation and relief, military symbols, direction and location, and utilization of the declination diagram. Leadership Laboratory is a continuation of MS 201 Laboratory.

MS 206 Army ROTC Basic Camp (Internship Program)

Credits: 4

This course consist of 6 weeks of training at Fort Knox, KY. Training consist of Army History, Role and Mission Map Reading/Land Navigation, Rifle Marksmanship, Basic Leadership Techniques, Physical Training/Marches, Individual and Unit Tactics, Communications, First Aid, Drill, Parades and Ceremonies, Military Courtesy, and Traditions. This course also teaches the student the ability to think and perform under pressure.

MS 301 Introduction to Military Team Theory

Credits: 2

Fundamentals to offensive and defensive tactics. Introduction to small unit communication systems. Internal defense operations. Military teaching principles and how they affect the students. Leadership training designed to further

develop leadership potential by encouraging participation in planning and conducting drills and ceremonies with emphasis directed to the functions, duties, and responsibilities of Senior noncommissioned officers and junior grade commissioned officers.

MS 302 Military Skill/Leadership Training

Credits: 2

A review of the principles and fundamentals of small unit tactics, and the application of the principles of offensive and defensive combat to units of the infantry battalion. Familiarization with characteristics, operation and employment of small unit weapons, communication systems and equipment, and continuated development of selected Military Skills. Orientation relative to administrative procedures, required standards of performance, and general conduct of training at ROTC Advanced Summer Camp. Continuation of Leadership Laboratory Training conducted in MS 301.

MS 306 Army ROTC Advanced Camp (Internship)

Credits: 4

Normally taken the summer following junior year. The training is conducted at designated U.S. Army Installations. This training provides cadets with practical experience in leadership, Military Training, small unit tactics, weapons qualifications, and communications. This internship is six weeks duration.

MS 401 Leadership Management and Professional Development

Credits: 2

Military Staff organization and utilization; basic concepts of Military Law as identified by the Uniform Code of Military Justice and Manual for Courts-Martial; Duties and responsibilities of a company grade officer; U.S. and contemporary problems; the chain of command and officer/enlisted relationships. Leadership Laboratory training emphasizing the functions, duties and responsibilities of junior Army officers with special attention directed to further developing leadership potential through active participation in planning and conducting military drill and ceremonies.

MS 402 Management Simulation and Active Duty Orientation

Credits: 2

Seminars and practical exercise employing advance leadership techniques providing opportunities to apply basic management skills within the context of realistic simulations; a review of Army installations and current U.S. Army policies. Leadership Laboratory will be a continuation of MS 401 Laboratory.

MS 406 Airborne Training (Internship)

Credits: 3

This course consist of 3 weeks of intensive airborne training to include physical

conditioning, landing techniques, parachute safety, simulated jumps, procedure in and around aircraft, and five (5) combat jumps from Air Force aircraft flying at 1250 feet.

Courses in Music Theory

101, 102. Theory I, II.

Credit 3(2-2) Each Semester

Review of the fundamentals of music, including the rudiments of music theory; construction and function of scales; intervals, triads and dominant seventh chords in root position and inversions; use of non harmonic tones; correlated analysis, rhythmic, melodic, harmonic, and key board drill.

119. Sight Singing and Ear Training

Credit 1(0-2)

Fundamentals of musicianship; corrected rhythmic, melodic, and harmonic drills.

200, 201. Theory III, IV.

Credit 3(2-2) Each Semester

Modulation, construction and function of seventh, ninth, eleventh, and thirteenth chords in root position and inversions; chromatic harmony; advanced modulation; trends of the twentieth century; corrected analysis, sightsinging, ear training, dictation, and keyboard drill. Prerequisites: 101, 102.

400. Counterpoint.

Credit 3(3-0)

Strict counterpoint in two or more parts; imitation; two and three-part inventions; canon; forms based on the chorale; invertible counterpoint; the fugue. Prerequisites: 200, 201.

402. Form and Analysis

Credit 3(3-0)

Harmonic and melodic structure of the phrase; phrases in combination; the analytical methods; theme and variation, ternary, rondo, binary, sonata, concerto and unique forms; the fugue and related genres. Prerequisites: 200, 201.

414. Composition

Credit 3(2-2)

Introduction to the basic elements of creative writing: melodic writing; organization and structure of musical sound; various approaches to the development of thematic and harmonic materials; as well as orchestration as it applies to composition. Prerequisites: 101, 102, 200, 201, and/or with the permission of the instructor.

501. Arranging

Credit 3(2-2)

Scoring for chorus, band, orchestra, vocal and instrumental chamber ensembles. Prerequisites: 400, 401.

Courses in Music History and Literature

216. Music Appreciation I.

Credit 3(3-0) Each Semester

A study of melody, harmony, rhythm, simple forms, vocal music, texture and the orchestra. Designed for the general student to provide an introductory survey to the art of music.

217. Music Appreciation II.

Credit 3(3-0)

A survey of the literature and styles of the several periods of music history from antiquity through the present. Designed for the general student as a continuation of Music Appreciation I. Prerequisite: Music 216.

218. Introduction to Music Literature.

Credit 2(2-0)

Familiarization of student with large body of musical material from all branches of musical writing; for vocal and instrumental, solo and ensemble, symphonic and choral groups. Special attention is given to style and structural procedures by principal composers. Designed for students with some musical background.

220. History of Black Music in America

Credit 3(3-0)

A general survey of the history of black music in America from the 17th century to the present, with major emphasis placed on significant forms, styles, and contributors and the sociological settings for such. Lectures will be supplemented by films, slides, demonstrations, live concerts, and phonograph recordings. Course is open to non-music majors as well as music majors. No formal knowledge of music theory and history, or previous background in music, is necessary for enrollment.

221. History of Jazz

Credit 3(3-0)

A general survey of the history of jazz from its beginnings to the present, with major emphasis placed on the stylistic and evolutionary development of the music and the significant contributors to jazz styles. Lectures will be supplemented by films, slides, demonstrations, live concerts, and phonograph recordings. Course is open to non-music majors as well as music majors. No formal knowledge of music theory and history, or previous background in music, is necessary for enrollment.

403. History and Literature of Music I.

Credit 3(2-2)

Analysis of main works of music literature presented in historical order; form, harmonic, and contrapuntal devices, orchestration, and other stylistic features investigated against the background of historic artistic and cultural developments; Ancient, Medieval, Renaissance and Baroque periods. Prerequisites: 101, 102.

404. History and Literature of Music II.

Credit 3(2-2)

Analysis of main works of music literature presented in historical order,

form, harmonic and contrapuntal devices, orchestration, and other stylistic features investigated against the background of historic, artistic, and cultural development; Classical, romantic, Postromantic and contemporary periods. Prerequisite: 403.

405. Music of the Romantic Period.

Credit 2(1-2)

Analysis of the main works of the principal composers of the early, middle, and late Baroque periods culminating with a more detailed study of the works of Handel and J.S. Bach; vocal, keyboard and other instrumental forms included; emphasis on stylistic characteristics. Prerequisite: 403.

406. Music of the Romantic Period.

Credit 2(1-2)

Intensive study of the works of the principal composers of the Romantic era; emphasis on general and individual stylistic characteristics. Prerequisite: 404.

407. Modern Music from 1890 to the Present

Credit 2(1-2)

Music of the so-called Viennese school of the twentieth century against the background of late German romanticism and French impressionism; the dissolution of the tonal system and the development of the serial principle; the music of Bartok, Stravinsky and others in the light of nineteenth and twentieth century investigations of folk or national materials and their influence upon serious artists; the relationship of Bartok and Stravinsky to traditional harmonic principles and to the formal structures of the past; other trends in the twentieth century. Prerequisites: 201, 404.

408. The Symphony

Credit 2(1-2)

The formulation of classical principles of construction by Josef Haydn, with reference to the contributions of Gluck, C.P.E. Bach and the Manheim school; the fulfillment of the classical ideal of the works of Mozart and Beethoven; changing concepts of the symphony after Beethoven; the Romanticists approach to form; study of the major Romantic symphonies by composers from Shubert to Mahler. Prerequisites: 201, 404.

409. Keyboard Music.

Credit 2(1-2)

Techniques, musicianship, and stylistic aspects of interpretation; from pre-Bach to the present; intellectual, emotional, and imaginative aspects of performance as exemplified by works from leading composers including Bach, Mozart, Beethoven, Chopin, Schumann, Debussy, and Moussorgsky; all lectures illustrated at the piano. Prerequisite: 404.

410. Opera.

Credit 2(1-2)

Establishment of the opera as a feasible musico-dramatic genre and the various solutions to problems of the opera as suggested by composers from the seventeenth to the twentieth centuries; special emphasis on the works of Monteverdi, Scarlatti, Gluck, Mozart, Wagner, and Verdi. Prerequisites: 201, 404.

411. The Art Song.

Credit 2(1-2)

Survey of the art song from seventeenth century Italy to present, with special emphasis on the song literatures of Germany, France, and contemporary America; practice in interpretation with particular attention to style and diction. Prerequisite. 404.

412. Chamber Music.

Credit 2(1-2)

Analysis of masterworks of chamber literature for instrumental and vocal ensembles by the main composers for each of the several periods in music history; interpretation. Prerquisite: 404.

Courses in Music Education

424. Percussion Instruments.

Credit 2(1-2)

Playing of percussion instruments, basic techniques of snare drum, timpani, xylophone, bells, chimes, and other percussion instruments are presented and practiced.

425. Woodwind Instruments.

Credit 2(1-2)

Playing of woodwind instruments; basic techniques for clarinet, flute, oboe, saxphone, and bassoon are presented and practiced.

426. Brasswind Instruments.

Credit 2(1-2)

Playing of brasswind instruments; basic techniques for trumpet, French horn, Trombone, Euphonium and Tuba are presented and practiced.

427. Voice Class

Credit 1(0-2)

Use of the singing voice; basic principles of singing, interpretation and musicianship; physiology, breathing; tone production, resonance and diction; application of basic principles to singing voice; pronunication, articulation, intonation, attack, legato, sostenuto, flexibility and dynamics; ensemble singing; techniques for producing choral tone in accompanied and unaccompanied styles, choral procedure and repertoire.

428. Stringed Instruments

Credit 2(1-2)

Study of the fundamentals of technique, tone productions, methods, and materials pertaining to the violin, viola, cello, and double bass; culminating in heterogeneous string ensemble activities.

Performance Organizations

The total numbers of semester hours to be earned through performance organization courses is specified in the outlines of major curricula. Every music

major is required to perform in one of the two major organizations (band or choir). If the principal applied subject is a wind or percussion instrument, the student must elect band; if the principal applied subject is voice or piano, the student must elect choir. The organization elected must be repeated each semester as specified until the required number of semester hours has been earned. Other performance organization courses are elected as required by the several curricula and similary repeated for credit until the necessary semester hours have been earned.

300. University Band.

Credit 2(0-5)

The University Marching Band is organized in the fall of the year (first semester) and plays for all football games. It is open to all qualified students, both men and women. The Symphony Band functions after the football season and continues for the rest of the year. Membership in both the Symphony and Marching Bands through audition with the Director of Bands. May be repeated for credit each semester.

301. University Choir.

Credit 2(0-4)

An organization designed to perform a wide range of compositions written for mixed voices representing various musical styles and periods. Numerous appearances throughout the year on campus and for various churches and civic organizations. Tours are planned annually for the southeastern, eastern, and midwestern regions of the country. Membership is open to all qualified students, both men and women through audition with the director. May be repeated for credit each semester.

302. Brass Ensemble.

Credit 1(0-2)

The study and performance of literature for brass instrument chamber groups from all periods of music history and in all styles. Frequent public concerts. Membership is open to all qualified students, both men and women through audition with the director. May be repeated for credit each semester.

303. Woodwind Ensemble.

Credit 1(0-2)

The study and performance of literature for woodwind chamber music history and in all styles. Frequent public concerts. Membership is open to all qualified students, both men and women through audition with the director. May be repeated for credit each semester.

304. Percussion Ensemble

Credit 1(0-2)

The study and performance of literature for percussion chamber groups representing a wide variety of styles. Designed to develop skill in ensemble performance on all of the instruments of percussion used in this growing modern repertoire, membership is open to all qualified students, both men and women through audition with the director. Frequent public concerts. May be repeated for credit each semester.

305. Opera Workshop.

Credit 1(0-2)

Musical and dramatic group study and performance of excerpts from the operatic repertoire. Includes an annual production of a standard opera and/or contemporary chamber work, with staging, costumes, and scenery. Students must secure the approval of their university voice instructor before enrolling. May be repeated for credit each semester.

*306. Chorus for Bass Clef Voices (Formerly Male Singers) Credit 1(0-2)

A choral organization designed to perform a wide variety of compositions written for voices in the bass clef range and representing various musical styles and periods. Frequent public concerts. Membership is open to qualified students through audition with the director. May be repeated for credit each semester.

307. Recital Seminar.

Credit 0(0-1)

A weekly assembly of music students with members of the faculty, providing opportunity for experience in public performance before an audience, lecture and discussion of problems in the general area of performance including ensemble playing and singing, conducting, accompanying, stage department, also performance. (Required of all music majors during each semester of residence; a grade of pass (P) or fail (F) will be assigned on the basis of participation and attendance).

308. University Jazz Ensemble

Credit 1(0-2)

The study and performance of jazz literature in all styles and idioms with special emphasis on contemporary compositions. Membership is open to all qualified students, both men and women through audition with the director. May be repeated for credit each semester.

309. University Orchestra

Credit 2(0-4)

An organization designed to perform a wide range of orchestral compositions representing various musical styles, and periods. Emphasis is placed on the more important of the standard symphonic works from the eighteenth, nineteenth, and twentieth centuries. Membership is open to all qualified students, both men and women through audition with the director. May be repeated for credit each semester.

Courses in Applied Music

503. Score Reading and Conducting

Credit 2(1-2)

Fundamental conducting beat patterns, size of beats, and use of each hand; discussion and study of musical terminology; conducting experience with laboratory group. Transposition; characteristics and ranges of instruments; study of tempos and dynamics; continued conducting experience with both choral and instrumental laboratory groups.

^{*} Pending approval by faculty.

550. Senior Recital

Credit 1(0-1)

Designed for the senior music major to demonstrate a high level of proficiency on a chosen instrument or in an applied music field (either brass, woodwinds, percussion, voice, strings, or keyboards) in a concert situation. The course will culminate in a formal concert performance of hallmarks of music literature. Prerequisites: 113, 213, 413

Music 114. Applied Music Secondary.

Credit 1(0-1)

Semi-private or class study on a secondary instrument. Students whose principal performing medium is voice or one of the orchestal instruments are required to study the piano as the secondary instrument. Students whose principle performing medium is the piano may choose either voice or an orchestral instrument as the secondary instrument. Piano students pursuing the music education curriculum with a choral concentration must study voice as the secondary applied area. Emphasis is placed on the development of sound basic performance technique. May be repeated for credit. Two semesters are required.

Music 214. Applied Music Secondary.

Credit 1(0-1)

Continued development of basic performance skills that were began in music 114. Attention will be given to preparation for the comprehensive examination on the secondary instrument required of all students.

Piano

Requirement for Admission—The applicants who elect piano as their principal instrument should be able to play all major and minor scales and arpeggi at a moderate tempo. They should play with technical ease and musical understanding, compositions equivalent in difficulty to the following: Clementi, Sonatina, Op. 36, No. 6: Mozart, Fantasie in D. Minor, Bach, Little Preludes, or Burgmuller, Studies, Op. 100.

- 113. A three-part invention by Bach. A movement of a Sonata by Haydn, Mozart, or Beethoven. Work of moderate difficulty by a Romantic composer. Scales and arpeggios in parallel or contrary motion at a moderately rapid tempo. Sight reading.
- 213. A prelude and fugue from the Well-Tempered Calavier by Bach, Completion of the Sonata started in 113. A work from the Romantic school. A work written since 1900. Scales and arpeggios at rapid tempo. Sight reading.
- 413. Dance forms from French suites or parties by Bach. A sonata by Haydn, Mozart or Beethoven, one movement memorized. A work from the Romantic School. A contemporary work. Sight reading.
- 513. A prelude and fugue from the Well-Tempered Calavier by Bach, a sonata by Haydn, Mozart, or Beethoven, one movement memorized.

560. Accompanying

Credit 2(0-4)

Analysis and practice in piano accompanying of singers and instrumentalists; sight reading and transposition; discussion of style and performance; experience in public performance. May be repeated for credit each semester. Prerequisite: Consent of instructor.

Voice

Requirements for Admission—The applicant should give evidence of ability to sing simple standard or classic art songs adequate tone quality and intonation. Some knowledge of piano is highly desirable.

100. Diction for Singers.

Credit 1(0-2)

A course designed to familiarize students with the pronunciation of English, Italian, German, and French through the study and use of the International Phonetic Alphabet.

- 113. 1) Competencies: Correct posture, breathing habits, phrasing, various five-note scales, diction.
 - 2) Studies: Simple English and Italian art songs, folk songs, spirituals.
 - 3) Solos: Six songs in English and Italian to be memorized each semester. Representative composers: Scarlatti, Handel, Purcell.
- 213. 1) Compencies: Correct posture, breathing habits, phrasing, diction, scals and arpeggios.
 - 2) Studies: English and Italian art songs, German art songs, folk songs,
 - 3) Solos: English songs in English, Italian, and German to be memorized each semester. Representative composers: Durante, Scarlatti, Schumann
- 413. 1) Competencies: Continuation of 213.
 - 2) Studies: English and Italian art songs, German songs, French art songs, folk songs and spirituals.
 - 3) Solos: Nine songs in English, Italian, German, and French to be memorized each semester. Representative composers: Schumann, Schubert, Strauss, Faure, Britten, Mozart.
- 513. 1) Competencies: Continuation of 413 with emphasis on preparation for senior recital.
 - 2) Studies: Continuation of 413 with more intricate scales and arpeggios.
 - 3) Solos: 10 songs in English, German, Italian and French to be memorized. Representative composers: Wolf, Schumann, Faure, Verdi, Britten, Handel, Debussy.

PERCUSSION

Requirements for Admission: The candidate shall demonstrate satisfactory performing ability in at least one of the following areas of percussion.

Performance: Snare drum, Xylophone, marimba and timpani. These competencies will include:

- 1. The ability to perform a solo.
- 2. The ability to perform an excerpt from a book in which the applicant has studied that will demonstrate musicianship and technical skill.
- 3. The ability to play at sight representative literature which is characteristic of the instrument.
- 4. Previous ensemble experience in band and/or orchestra. Additional compentencies for snare drum:

1. Basic knowledge of rudiments.

2. The performance of a Sawa march or the equivalent.

Additional competencies for xylophone marimba:

The ability to play major scales through 4 flats and 4 sharps in one octave. Additional competencies for timpani:

1. Basic knowledge of timpani techniques.

- 2. A thorough knowledge of range of each timpano.
- 113, 213. Competencies: (a) Snare Drum; Fundamentals, military techniques, reading and control.

Mallets: Fundamentals, reading technique—musical orientation. Studies: Price, Beginning Snare Drum; Goldeberg, Mallet Instruments; Stone, Stack Control; Bower, Drum Method; Gardner,

Modern Method, Book I, Stone, Mallet Control.

Solos: Wilcaxon, Rudimental Solos: Price, Exhibition Drum Solo; Colgrass, Advanced Snare Drum Solo; Brever Easy—Medium Mallet Solos; Stone, Military Drum Beats.

413, 513. Competencies: (a) Snare Drum; Fine control, orchestra techniques. (b) Mallets; Reading, advanced techniques, tambourine, castanets, brass drum, and cymbals. (c) Timpani: Kettle technique, tuning exercises and control. (d) Latin-American Instruments: (e) Percussion, "Trap" techniques, tambourine, castanets, brass drum, and cymbals. Basic skills on each.

Studies: Price, Techniques and Exercises for Triangle, Tambourine and Castanets; Brewer, Daily Studies; Goldenberg, Mallet Instruments. Goodman, Timpani Method; Fresia, Timpani Method; Tourte, Snare Drum Technique; Gardner, Modern Method, Book II, Mallets; Chopin, Advanced Techniques for the Modern Drummer.

Solos: McKenzie, Graded Timpani Solos; Britton, Timpani Solos; Hart, Timpani Solos; Price, Unaccompanied Timpani Solos; Brewer, 3 and 4 Mallet Solos, Quick 3 and 4 Mallet Solos; Stone Rudimental Drum Solos; Duets and Quintets.

WIND INSTRUMENTS

Requirements for Admission: The candidate shall show evidence:

- 1. Basic development in embouchure and articulation.
- 2. Knowledge of fingering and alternates.

- 3. Satisfactory tone quality and control.
- 4. Ability to play major scales through 4 flats and 4 sharps, in eight notes (M.M.d-72) and the chromatic scale both slurred and articulated.
- 5. Minimum—Two octave range.
- Ability to play a simple song demonstrating musicianship which includes phrasing and expression.
- 7. Previous study in the equivalent of the Rubank Advanced Method.
- 8. Previous ensemble experience in band and/or orchestra.
- Ability to play at sight representative literature which is characteristics of the instrument.

TRUMPET

113, 213. Competencies: Breathing; elementary embouchure and tone production; tonguing as applied to various instruments; coordination of tone production habits through progressive major and minor scales; practical problems of artistic performance.

Studies: Cornet and Trumpet—Complete teaching for cornet—Beeler, Waler Boosey and Hawkins; 1952, Second Book of Practical Studies for Cornet and Trumpet—Robert Getchell; Hovey, Nilo, Belwin, Inc. 1948.

Literature: Selected from NIMAC—Music Educator's National Conference.

413, 513. Compentencies: Intonation; embouchure techniques; breath control and tone quality; articulation; reading; style; performance techniques.

Studies: Ruband Advance Method:

Literature: Selected from NIMCA—Music Educator's National Conference.

French Horn

113, 213. Competencies: Breathing, embouchure and tone production; tonguing; progressive major and minor scale technique; practical problems of artistic performance.

Studies: Rubank, Intermediate Method for French Horn; Modern

Pares Foundation.

Studies: Whistler, Daily Exercises for French Horn, Pottag.

Literature: Selected from NIMAC—Music Educator's National
Conference.

413, 513. Competencies: Intonation, embouchure techniques, breath control and tone quality; articulations; reading; style; performance techniques.

Studies: Rubank, Advanced Method for French Horn.

Literature: Selected from NIMAC—Music Educator's National Conference.

Trombone-Baritone

113, 213. Competencies: Breathing, elementary embourchure and tone production; tonguing as applied to various instruments, coordination of tone production habits through progressive major and minor scales; practical problems of artistic performances.

Studies: Trombone and Baritone

Arbans-Prescott Method for Trombone-Baritone—Carl Fisher, Inc. Rubank Intermediate Method for Trombone-Baritone. Skornicka and Boltz, Rubank, Rubank, Inc. Modern Pares Foundation. Studies for Trombone and Baritone—Whistler.

Literature: Selected from NIMAC—Music Educator's National Con-

ference.

413, 513. Competencies: Intonation, embouchure techniques; breath control and tone quality; articulations; reading; style; performance techniques *Studies:* Rubank, Advanced Method for Trombone and Baritone. *Literature:* Selected from NIMAC—Music Educator's National Conference.

Tuba

113, 213. Competencies: Breathing, elementary embouchure and tone production; tonguing as applied to various instruments; coordination of tone production habits through progressive major and minor scales; practical problems of artistic performances.

Studies: Tuba

Rubank Intermediate Method for Brass—Skornicka and Boltz. Rubank, Inc. First Book of Practical Studies for Tuba—Hovey N. Belwin, Inc. Vandercook Etudes for Bass—Rubank, Inc. Literature: Selected from NIMAC list Music Educator's National Conference.

413, 513. Competencies: Intonation, embouchure techniques, breath control and tone quality; articulation; reading; style; performance techniques.

techniques.

Studies: Rubank, Advanced Method for Tuba.

Literature: Selected from NIMCA list—Music Educator's National Conference.

Flute

113. Competencies: Major and Minor Scales through 5 sharps and 5 flats. Emphasis on fingering and tonal development. Studies: Soussmann, Complete Method for Flute; Anderson, 24 Progressive Studies, Op. 33.

Literature: Bizet, Minuet; Mozart, Adagio.
213. Competencies: All Major and Minor Scales throughout the practical

performing range. Emphasis on sight reading.

Studies: Cavally, Melodious and Progressive Studies for Flute Soussmann. Literature: Bach, Suite in B. Minor; Handel, Sonatas.

Competencies: Continued scale study, emphasis on performing literature.

Studies: Soussman-Moyse, Flute Studies. Literature: Bach, Sonatas; Debussy, Syrinx.

513. Competencies: Continued emphasis on performing literature.

Studies: Schmitd, Orchestral Studies.

Literature: Chaminade, Concertino, Hindemith, Sonata.

Oboe

113. Competencies: Major and Minor Scales through 5 sharps and 5 flats. Emphasis on fingering and tonal development. Studies: Ferling, 144 Preludes and Studies; Barrett, Complete Method for Oboe.

Literature: Franck, Piece V; Piece in G. Minor.

213. Competencies: All Major and Minor Scales throughout the practical performing range. Emphasis on sight reading. Reed adjustment. *Studies:* Barret, Method: Tustin, Technical Studies.

Literature: Schumann, Three Romances: Telemann, Concerto in F Minor.

413. Competencies: Continued scale study, emphasis on performing literature. Reed Making.

Studies: Tustin, Studies; Prestin.

Literature: Handel, Sonata in G. Minor, Goosens, Concerto.

513. Competencies: Continued emphasis on performing literature. Studies: Orchestral Literature.

Clarinet

113. Competencies: Major and Minor Scales through 5 sharps and 5 flats. Emphasis on fingerings and tonal development.

Studies: Klose Celebrated Method for Clarinet and Rose 32 Etudes.

Literature: Stubbins, Recital Literature for the Clarinet, Vol. II.

213. Competencies: All Major and Minor Scales throughout the practical performing range. Emphasis on sight reading. Reed adjustment. Studies: Klose, Rose 40 Etudes.

Literature: Stubbins, Recital Literature, Vols. I and II.

413. Competencies: Continued scale study, emphasis on performing literature.

Studies: Baermann, Method for Clarinet; Jean Jean, 18 Etudes de Per-

fectionnemen.

Literature: Stubbins, Recital Literature, Vol III (The Concertos)

513. Competencies: Continued emphasis on performing literature. Studies: Baermann; Jean Jean; Orchestral Studies. Literature: Bernstein, Sonata; Debussy, Rapsodie.

Saxophone

113. Competencies: Major and Minor Scales through 5 sharps and 5 flats. Emphasis on fingerings and tonal development. Studies: DeVille, Universal Method; Ebdressen, Endrejen, Supplementary Studies.

Literature: Benson, Cantilena; Gretchaninoff, Phantasme.

213. Competencies: All Major and Minor Scales through the practical performing range. Emphasis on sight reading. Reed adjustment. Studies: DeVille; Rascher, Top Tones for Saxophone. Literature: Bozza, Aria, Casadesus, Romance.

413. Competencies: Continued scale study, emphasis on performing literature. Introduction to jazz improvising. Studies: DeVille: Rascher, 158 Saxophone Exercises.

Literature: Creston, Sonata; Debussy, Rapsodie; Fasch, Sonata; Music Minus one Saxophone.

513. Competencies: Continued emphasis on performing literature. Studies: Traler-Lazarus, Virtuoso Studies. Literature: Bozza, Scaramouche.

Bassoon

113. Competencies: Major and Minor Scales through 5 sharps and 5 flats. Emphasis on fingerings and tonal development. Studies: McDowell, Practical Studies, Bk. I; Kovar, 24 Daily Exercises;

Wessenborn, Practical Method Bassoon. Literature: Bakalenikoff, Three Pieces; Weinberger, Sonatine.

213. Competencies: All Major and Minor Scales throughout the practical playing range. Emphasis on sight reading. Reed adjustment and making. Studies: Wesseborn, Method for Bassoon; Kovar, 24 Daily Exercises; McDowell, Practical Studies, Bk. II. Rep. Literature: Telemann, Sonata in F Minor, Weber, Concerto in F

(Slow Movement). 413. Competencies: Continued scale study, emphasis on performing liter-

Studies: Pierne, Concert Piece; Galliard, Sonatas; Mozart, Concerto. 510. Competencies: Continued emphasis on performing literature. Or-

chestral Studies. Studies: Orchestra Passages

Literature: Hindemith, Sonata

Courses for Advanced Undergraduates and Graduates

609. Music in Early Childhood.

Credit 3(2-2)

A conceptual approach to the understanding of musical elements; and understanding of the basic activities in music in early childhood; modern trends in music education; Kodaly and Orff methods.

610. Music in Elementary School Today.

Credit 3(2-2)

Music in the elementary school curriculum; creating a musical environment in the classroom; child voice in singing, selection and presentation of rote songs; development of rhythmic and melodic expressions; directed listening; experimentation with percussion and simple melodic instruments; criteria for utilization of notational elements; analysis of instrumental materials.

611. Music in The Secondary School Today

Credit 3(3-0)

Techniques of vocal and instrumental music instruction in the junior and senior high schools; the general music class; the organization, administration and supervision of music programs, as well as music in the humanities. This course includes the adolescent's voice and its care; the testing and classification of voices; operetta production; the instrumental program; and training glee clubs, choirs, bands, and instrumental ensembles.

614. Choral Conducting of School Music Groups.

Credit 2(0-4)

Rehearsal techniques; balance, blend and relationship of parts to the total ensemble; analysis and interpretation of literature appropriate for use in school at all levels of ability; conducting experience with laboratory group.

616. Instrumental Conducting of School Music Groups. Credit 2(0-4)

Rehearsal techniques; balance, blend and relationship of parts to the total ensemble; analysis and interpretation of literature appropriate for use in school groups at all levels of ability; conducting experience with laboratory group.

618. Psychology of Music.

Credit 3(2-2)

The study of the physical and psychological properties of musical sounds and the responses of the human organism to musical stimuli. The principles developed are applied to various field of applied psychology such as the learning of musical skills, Therapeutic uses of music, and the use of music in industry to improve production.

620. Advanced Music Appreciation

Credit 3(2-2)

Analytic studies of larger forms from all branches of music writing; Special emphasis on style and structural procedures by principal composers; works taken from all periods in music history. Designed for students with previous study of music appreciation.

COURSES IN NURSING

100. Nursing Orientation

1(1-0)

The course is a survey of the University and its programs with emphasis on broadening the students knowledge of nursing as a discipline and as a profession. (Open to all potential Nursing Majors)

200. Perspectives of the Nursing Profession

The study of nursing as a profession is explored and related to cognitive knowledge base to begin practice in the profession. Included are concepts and theories basic to the practice of nursing.

201. Nursing Competency Laboratory I

1(0-2)

The focus in this laboratory course is on the development of a personal philosophy of nursing practice and introduction of a limited number of basic psychomotor nursing skills.

210. Perspectives of the Nursing Profession II

3(3-0)

This course provides the foundation for further study in Nursing. Emphasis is on an integrative approach to the study of basic needs of man and the nursing process in selected patient care situations.

211. Nursing Competency Laboratory II

2(0-5)

The focus of this laboratory course is on the development of selected basic nursing skills, increased familiarity with selected health care terminology, and the essential mathematical and measurement skills. Opportunity is provided to apply the Nursing process at a beginning level with selected patients.

300. Health Needs of the Nuclear Family

5(5-0)

This course is designed to provide students an opportunity to broaden their knowledge of the family process. The focus will be on The Life Cycle of Man from Conception Through Young Adulthood.

The emphasis will be centered on the needs of the family and its members, the human development process, and common health problems of the pregnant client and children. This content provides the theoretical base for Nursing 301—Nursing Competency Laboratory III and Nursing 301—Nursing Practice I.

301. Nursing Competency Laboratory III

1(0-2)

A laboratory course designed to focus on the acquisition of psychomotor skills pertinent to administering care to members of the nuclear family with emphasis on the pregnant client and children.

302. Nursing Practice I

This course is a nursing practice course with emphasis on the application of the nursing process when providing care to members of the nuclear family. The focus is on nursing care of the pregnant client and children. Two six hour or three four hour practice periods are scheduled.

310. The Pathophysical Needs of Man I

5(5-0)

A study of the nature of health and illness with emphasis on the pathological manifestations in selected adult patients. Emphasis is on understanding pathophysical manifestations caused by illness and disability. Additionally, the psychosocial, socio-economic and maturational aspects of specific pathophysical problems are explored. The content provides the theoretical base for Nursing 311 and Nursing 312.

311. Nursing Competency Laboratory IV

1(0-2)

A laboratory course designed to provide the student with the opportunity to develop psychometer skills requisite to meeting needs of patients with specific pathophysical conditions as dicussed in Nursing 310.

312.. Nursing Practice II

4(0-12)

This is a nursing practice course with emphasis on the care of the adult patient. The focus is on application of the nursing process when providing nursing care to patients with selected pathophysical conditions. Two six hour or three four hour practice periods are scheduled.

400. The Pathophysical Needs of Man II

6(6-0)

This course is a continuation of Nursing 310. The focus is on the acquisition of knowledge related to complex problems of the ill adult patient. Theories of nursing management, rehabilitation and restoration are explored. The content provides the theoretical base for Nursing 401.

401. Nursing Practice III

6(0-18)

This is a nursing practice course. Focus is on application of the nursing process in meeting the nursing needs in complex situations. Emphasis is placed on providing learning opportunities for increasing nursing competence when meeting the nursing needs of the ill adult patient. Three six hour practice periods or a total of eighteen hours per week are scheduled.

410. The Psychosocial Needs of Families

6(6-0)

This course is designed to provide the opportunity to understand the major sociological, patho-psychological, economic and legal factors which impact on family life. Current theories and concepts underlying the family's interaction and suggested methods for solving or coping with health or illness problem are explored. This course provides the theoretical base for Nursing 411.

411. Nursing Practice IV

6(0-18)

This is a nursing practice course with emphasis on care of patient with pathopsychological illnesses and families with health and socioeconomic problems. The learner applies the nursing process when providing nursing care. Three six hour sessions or a total of eighteen per week is scheduled for practice.

500. Survey of Human Sexuality

3(3-0)

This course explores theories and concepts of human sexuality throughout the life cycle. It enables the learner to recognize the need for counselling in all areas of sexuality through the exploration of human sexual behavior. Additionally, it includes normal sexual responses and common sexual dysfunctions.

501. Dimensions of Death Education

3(3-0)

This course will heighten one's self-awareness of death through the study of sociological, psychological, cultural and biological concepts. Additionally, it will enable the student to cope with this inevitable experience.

563. Nursing Seminar

2(2-0)

The study of nursing and the investigation of methodologies in search of greater depth of knowledge and understanding for the improvement of nursing practice.

COURSES IN PHYSICS

*101 Introduction To Astronomy

Credit 3(3-0)

Fundamentals of astronomy with emphasis on methods of observation and the solar system. Astronomical instruments, including optical and radio telescopes. The nature of the sun, moon, planets and other objects of the solar system.

102. Physics Orientation

Credit 1(1-0)

Lectures, seminars and laboratory demonstrations. Orientation to the Physics Department. Presentation of selected topics, student participation and discussions.

*200 Introductory Physics

Credit 2(2-0)

A non-laboratory course involving the study of mechanics, heat, electricity, wave motion, and atomic and nuclear phenomena. Recommended for students with poor high school preparation in physics who should prepare for College Physics or General Physics.

201. Survey of Physics

Credit 3(2-2)

A one-semester study of selected topics in physics including simple machines, heat, sound, electricity, and light. Prerequisite: Math 111 or 102.

*211. Technical Physics I

Credit 3(4-0)

A study of basic principles of mechanics, heat, wave motion, and sound. Emphasis is placed on applications of physics in modern technology. Prerequisite: Math 111. Corequisite: Math 112, and Physics 216.

212. Technical Physics II

Credit 3(4-0)

A continuation of Physics 211. Magnetism, electricity, light, and modern physics. Prerequisite: Physics 211. Corequisite: Physics 217.

216. Technical Physics I Laboratory

Credit 1(0-2)

A qualitative and quantitative study of certain physical systems; critical observations and codification of data are emphasized. Corequisite: Physics 211.

217. Technical Physics II Laboratory

Credit 1(0-2)

A continuation of Physics 216. Corequisite: Physics 212.

*221. General Physics I

Credit 3(3-0)

A study of the fundamental principles of mechanics, heat, electromagnetism, wave motion, sound, light and modern physics. Calculus used. Corequisite: Math 117 or 221, Physics 231.

^{*} These courses may be used to satisfy the general education science requirement.

*222. General Physics II

Credit 3(3-0)

A continuation of Physics 221. Prerequisite: Physics 221, Corequisite: Physics 232.

*225. College Physics I

Credit 3(3-0)

A study of the fundamental principles of mechanics, properties of motion, heat and thermometry, electromagnetism, wave motion, sound, light, and modern physics. Calculus is not used, however, a knowledge of analytical geometry is required. Prerequisite: Math 113 or 116. Corequisite: Physics 235.

226. College Physics II

Credit 3(3-0)

A continuation of Physics 225. Prerequisite: Physics 225, Corequisite: Physics 236.

231. General Physics I Laboratory

Credit 2(0-4)

Resource material may be provided for self-study and special projects. A selected group of experiments will be performed to verify and demonstrate certain physical phenomena. Corequisite: Physics 221.

232. General Physics II Laboratory

Credit 2(0-4)

A continuation of Physics 231. Corequisite: Physics 222.

235. College Physics I Laboratory

Credit (0-2)

A course which will emphasize the importance of experimentation and observations in the development of a physical science. A selected group of experiments will be undertaken. Corequisite: Physics 225.

236. College Physics II Laboratory

Credit 1(0-2)

A continuation of Physics 235. Corequisite: Physics 226.

400. Physical Mechanics I

Credit 3(3-0)

An application of mathematical methods to motion of a particle, damped harmonic oscillator, central field motion, rotating coordinate systems, Fourier series, Lagrange's equations. Vector methods used. Prerequisite: Physics 222. Corequisite: Math 300.

401. Mathematical Physics

Credit 3(3-0)

Applications of mathematics to solution of physical problems. Selected topics in vector analysis, differential equations, special functions, calculus of variations, eigenvalues and functions, matrices. Prequisite: Math 500.

402. Thermodynamics

Credit 3(3-0)

Includes equations of state, laws of thermodynamics, entropy, fluid flow,

^{*} These courses may be used to satisfy the general education science requirement.

heat transfer, single and two-phase mixtures, and statistical mechanics. Prerequisite: Physics 222. Corequisite: Math 300.

403. Electromagnetism I

Credit 3(3-0)

Includes DC and AC circuitry theory, Gauss's Law, Poisson and LaPlace equations, dielectric and magnetic materials, Maxwell's equations. Prerequisites: Physics 222, Math 300.

404. Physical Optics

Credit 3(3-0)

Emphasis on wave phenomena. Includes propagation, reflection, refraction of light, lenses and optical instruments, interference, diffraction, polarization, line spectra, thermal radiation. Prerequisites: Physics 222, Math 117 or 222.

405. X-Ray Diffraction

Credit 3(3-0)

An introductory course with emphasis on the powder method, including x-ray sources, crystal shapes, and determination of unit cell parameters and atomic positions. Prerequisite: Physics 406 or special permission.

406. Introduction to Modern Physics

Credit 3(3-0)

Quantization of mass, charge, radiation, atomic structure, relativity, theory of solids, natural and artificial radioactivity. Prerequisites: Physics 222 or 226, Math 222 or 117.

408. Solid State Physics

Credit 3(3-0)

Structure and imperfections in crystals and metals, energy levels of metals, semi-conductors and their applications, insulators. Prerequisite: Physics 222 and 406.

410. Introduction to Special Relativity

Credit 2(2-0)

A study of the relativistic concepts of space and time. Relativistic kinematic dynamics, and electromagnetic theory. Prerequisite: Physics 406.

420. Physics Seminar I

Credit 1(1-0)

A study of current developments in physics.

421. Physics Seminar II

Credit 1(1-0)

A study of current developments in physics.

430. Physics Research I

Variable 1-3

Involves student participation in research conducted by staff. Prerequisite: Consent of staff.

431. Physics Research II

Variable 1-3

Involves student participation in research conducted by staff. Prerequisite: Consent of staff.

555. Advanced Laboratory I

Credit 3(0-6)

A junior-senior level course with groups of experiments involving vacuum system magnetic resonance, x-ray diffraction, spectroscopy and quantization of charge. Prequisite: Consent of instructor and Physics 406, 403.

556. Advanced Laboratory II

Credit 3(0-6)

A continuation of Advanced Laboratory I. Prerequisite: Consent of instructor.

557. Advanced Laboratory III

Credit 3(0-6)

A junior-senior level course involving the study and careful performance of a group of experiments in electronic devices as applied to physics. Prerequisite: Junior Classification.

Advanced Undergraduate and Graduate

600. Physical Mechanics II

Credit 3(3-0)

A continuation of Physics 400. Prerequisites: Physics 400, Math 500.

602. Electromagnetism II

Credit 5(5-0)

A continuation of Physics 403. Prerequisites: Physics 403, Math 500.

605. Quantum Mechanics I

Credit 3(3-0)

Postulates of wave mechanics and Schrodinger equation. Solutions of the Schrodinger equation for the harmonic oscillator, the square well, and the hydrogen atom. Concepts of spin and angular momentum. Approximate solutions of the Schrodinger equation, perturbation theory. Stark and Zeeman affects. Prerequisites: Physics 406 and Math 500.

606. Nuclear Physics

Credit 3(3-0)

Nuclear structure, nuclear interactions, radioactive decay, reactions and cross-sections, nuclear forces, and scattering theory. Prerequisites: Physics 406, Math 500.

615. Quantum Mechanics II

Credit 3(3-0)

The problem of one and two electron atoms. Hydrogen atom and the alkalis. The hydrogen molecule and the moleculal bond. The deuteron problem in nuclear physics. Alpha decay. Scattering theory and the nature of the nuclear force. The motion of a particle in a periodic potential and the role of Quantum Mechanics in solids. Operator formalism. Prerequisite: Physics 605.

705. General Physics for Science Teachers I

Credit 3(2-2)

For persons engaged in teaching. Includes two hours of lecture demonstrations and one two-hour laboratory period each week. Emphasis is placed upon understanding the basic principles of physics. Both courses may be combined during a single semester for double credit. For teachers only. Prerequisite: College Physics.

706. General Physics for Science Teachers II

Credit 3(2-2)

A continuation of Physics 705.

707. Electricity for Science Teachers

Credit 2(2-0)

Includes electric fields, potentials, direct current circuits, chemical and thermal emf's, electric meters, and alternating currents. For teachers. Prerequisite: College. Physics.

708. Modern Physics for Science Teachers I

Credit 2(2-0)

An introductory course covering the usual areas of modern physics. Both courses may be combined curing a single semester for double credit. For teachers only. Prerequisite: College Physics.

709. Modern Physics for Science Teachers II

Credit 2(2-0)

A continuation of Physics 708.

COURSES IN PLANT SCIENCE

Undergraduate

110. Plant Science I. (Formerly 1400) Credit 3(2-2)

An introduction to the basic principles underlying the production of economic crops. Brief introduction to drug and medical plants. (Prerequisite Bot. 140)

300. Plant Science II. (Formerly Plant Science 1420) Credit 3(2-2)

History, classification, culture and utilization of economic plants; basic physical, economical and social conditions relating to their growth, distribution and improvement. (Prerequisite Pl.Sc. 338.)

520. Seminar in Plant Science and Technology.
(Formerly 1460)

Credit 1(1-0)

Current problems in Plant Science and Technology. Designed especially for unifying the three major areas of the department by involving both the staff and junior and senior students.

618. General Forestry. (Formerly 1412)

Credit 3(2-2)

History, classification, culture, and utilization of native trees, with special emphasis on their importance as a conservation resource and the making of national forestry policy. (Prerequisite: Botany 140)

Courses in Agricultural Engineering

Undergraduate

113. Agricultural Drawing.

Credit 3(0-6)

Lettering, use of instruments, projection drawing, auxiliaries, dimensioning, isometric drawing, working drawings-structural, and graphics (charts & graphs).

114. Home and Farm Maintenance.

Credit 3(4-1)

Selection, sharpening, care and correct use of shop tools and equipment; woodwork and simple carpentry; simple electrical repairs; sheet metal work; electric arc and oxyacetylene welding; pipe fitting and simple plumbing repairs.

303. Field Machinery.

Credit 3(1-4)

Principles of operation, selection and the study of field machinery efficiency.

304. Structures and Environment.

Credit 3(1-4)

Fundamentals of building construction, applied to location, selection of materials, foundations, planning farm structures, and environmental considerations such as temperature, humidity, condensation and ventilation.

401. Surveying, Drainage, and Soil Conservation.

Credit 3(1-4)

Principles of surveying (instrumentation-area computations), drainage, planning of soil erosion and drainage systems, based on topographical and soil requirements.

402. Farm Power. (Formerly 1442)

Credit 3(1-4)

Principles of mechanical power, use, care and adjustment of internal combustion engines. (Prerequisite Physics 225.)

522. Dairy Engineering. (Formerly 1462)

Credit 3(1-4)

The general engineering principles of power selection, installation and maintenance, refrigeration and heat transfer as they apply to equipment used in the dairy industry. Also plant arrangement and management for dairy science majors.

523. Electric Power. (Formerly 1463)

Credit 3(1-4)

The study of electricity, electrical wiring, and electrical devices including motors, with particular emphasis upon the relation of these to the home and farm. (Prerequisite Physics 201, 225.)

524. Water Supply and Sanitation for Farm and Home. Credit 3(1-4)

The planning and installation of farm water, such as source, quantity, quality, treatment and sanitation systems.

525. Farm Shop Organization and Management. (Formerly 1465) Credit 3(1-4)

A course designed for prospective and in-service teachers of vocational agriculture; includes presentation of purpose, plans and equipment of shops, organization of course of study and methods of teaching. (Prerequisite Ag. Engr. 114; Ag. Ed. 501.)

ADVANCED UNDERGRADUATE AND GRADUATE

600. Conservation, Drainage and Irrigation. (Formerly 1475) Credit 3(1-4)

Improvement of soil by use and study of conservation practices, engineering structures, and irrigation systems. (Prerequisite Ag. Engr. 401.)

601. Advanced Farm Shop. (Formerly 1476)

Credit 3(1-4)

Care, operation and maintenance of farm shop power equipment. (Pre-requisite Ag. Engr. 114.)

602. Special Problems in Agricultural Engineering. Credit 3(0-6) (Formerly 1477)

Special work in Agricultural Engineering on problems of special interest to the student. Open to seniors in Agricultural Engineering.

Courses in Crop Science

Undergraduate

307. Forage Crops. (Formerly 1427)

Credit 3(2-2)

Grasses, legumes and other plants and their uses as hay, pasture, silage and special purpose of forages, identification of plants and seeds and study of quality in hay, silage and pasture population. (Prerequisite Plant Science 110.)

405. Determining Crop Quality. (Formerly 1445)

Credit 4(2-4)

The recognition of high quality crop products as influenced by growth and maturity factors, weeds and diseases, determination of commercial quality through study, land use and grades; identification of crops, planning crops exhibits. (Prerequisite Plant Science 300.)

603. Plant Chemicals. (Formerly 1478) Credit 3(2-2)

A study of the important chemical pesticides and growth regulators used in the production of economic plants. (Prerequisite Chem. 102 and Pl. Sc. 300.)

604. Crop Ecology. (Formerly 1479) Credit 3(3-0)

The physical environment and its influence on crops; geographical distribution of crops.

605. Breeding of Crop Plants. (Formerly 1480) Credit 3(2-2)

Significance of crop improvements in the maintenance of crop yields; application of genetic principles and techniques used in the improvement of crops; the place of seed certification in the maintenance of verietal purity.

606. Special Problems in Crops. (Formerly 1481)

Credit 3(3-0)

Designed for students who desire to study special problems in crops. Repeatable for a maximum of six credits. By consent of instructor.

607. Research Design and Analysis. (Formerly 1482)

Credit 3(2-2)

Experimental designs, methods and techniques of experimentation; application of experimental design to plant and animal research; interpretation of experimental data. (Prerequisite Ag. Econ. 644, Math. 224.)

Courses in Earth and Environmental Science

Undergraduate

201. The Earth-Man's Environment.

Credit 3(2-2)

A study of the earth's physical environment as related to climate, natural resources and physiography. The interrelationship of man with the earth's environment as revealed in the modification of natural processes. No prerequisite.

309. Elements of Physical Geology. (Formerly 1429)

Credit 3(2-2)

Relation of geological principles in the development of a balanced concept of the earth and earth history; rock and mineral identification, utilization of geological and topography maps, geological processes, resource conservation, urban and environmental problems. (Prerequisite Chem. 101 or consent of instructor.)

330. Elements of Weather and Climate. (Formerly 1430)

Credit 3(2-2)

A study of the fundamental elements of weather conditions as revealed in world patterns of climate types. This course surveys the types of land forms and makes applications to problems in engineering, military science and in planning for agricultural, urban and regional development projects. (Prerequisite E. Sc. 309; Soil Sc. 338, or consent of instructor.)

408. Aerial Photointerpretation. (Formerly Earth Science 343)

Credit 3(1-4)

The interpretation of aerial photography as an aid to the study of terrains of all types. This course surveys the types of land forms and makes applications to problems in engineering, military science and in planning for agricultural, urban and regional developmental projects. (Prerequisites Ea. Sc. 1429, Soil Sc. 1438 or consent of instructor.)

Advanced Undergraduate and Graduate

622. Environmental Sanitation and Waste Management. Credit 3(2-2)

Study of traditional and innovative patterns and problems of managing and handling waste products of urban and rural environments, their renovation and reclamation.

624. Earth Science, Geomorphology

Credit 3(2-2)

Various land forms and their evolution—the naturally envolved surface features of the Earth's crust and the processes responsible for their evolution, their relation to man's activities and as the foundation for understanding the environment.

625. Earth Resources

Credit 3(2-2)

Conservation, management and use of renewable and non-renewable resources. Their impact on the social and economic quality of our environment.

626. Aquaculture

Credit 3(2-2)

Using water as a natural resource in the production of food, for recreation, and wildlife preservation, and its management as it relates to environmental problems affecting water quality, with emphasis on freshwater lakes and ponds.

627. Strategies of Conservation

Credit 3(2-2)

An approach to the teaching of environmental conservation as an integral part of the general curriculum.

Courses in Horticulture

Undergraduate

118. Amateur Floriculture. (Formerly 1408)

Credit 3(2-2)

General principles of growing flowers on a small scale in small greenhouses, home, school and public buildings; growing flowers outside for landscape effect and cutting.

119. The Functional Usage of Plant Materials.

Credit 3(0-6)

The use of plants and related materials to enhance temporary settings with emphasis on the utilization of horticulture plant materials indoor and out-of-doors. Special attention to be given to temporary gardens, planters, interior scenes and designs. (No prerequisite).

334. Plant Propagation. (Formerly 1434)

Credit 3(2-2)

Study of types, construction, and management of propagation structures; fundamentals principles of propagation by seed, cuttage, budding, grafting, and layerage. (Prerequisite Pl. Sc. 110.)

335. Principles of Landscape Design. (Formerly 1433)

Credit 3(2-2)

Fundamentals of design of planning the arrangement of small properties, such as homes, schools, small parks and playgrounds.

514. Nursery Management. (Formerly 1454)

Credit 3(2-2)

Planning, operations and methods used by wholesale, retail, and landscape nurseries. Emphasis on cultural practices, records and selling techniques. (Prerequisite Hort. 334.)

527. Basic Floral Design. (Formerly 1467)

Credit 3(1-4)

Essentials of flower arrangement and plant decoration for the home, office, hospital, school and church.

528. Flower Shop Management. (Formerly 1468)

Credit 3(2-2)

Designing, planning, handling of merchandise, buying and selling methods, and general policies.

529. Landscape Design and Construction. (Formerly 1469)

Credit 3(0-6)

Problems in design of land areas with emphasis on orientation, arrangement, and circulation. Instruction in planning, presentation, cost accounting, and construction. (Prerequisite Hort. 335.)

530. Landscape Design and Construction. (Formerly 1470)

Credit 3(0-6)

Continuation of Hort. 530. Problems in design of larger land areas involving more complex features; practice in landscape model construction. (Prerequisite Hort. 529.)

Advanced Undergraduate and Graduate

608. Special Problems. (Formerly 1483)

Credit 3(3-0)

Work along special lines given largely by the project method for advanced undergraduate and graduate students who have the necessary preparation.

610. Commercial Greenhouse Production. (Formerly 1449)

Credit 3(2-2)

Culture of floriculture crops in the greenhouse out-of-doors with emphasis on cut flowers and outside bedding plants. Special attention given to seasonal production.

611. Commercial Greenhouse Production. (Formerly 1450)

Credit 3(2-2)

Culture of floriculture crops in the greenhouse with emphasis on pot plant and conservatory plants. Special attention given to seasonal production. (Prerequisite Hort. 334.)

612. Plant Materials and Landscape Maintenance.
(Formerly 1452)

Credit 3(2-2)

Identification, merits, adaptability, and maintenance of shrubs, trees, and vines used in landscape planting trees, shurbs, bulbs, and perennials.

613. Plant Materials and Planning Design. (Formerly 1453)

Credit 3(2-2)

Continuation of Hort. 612 with added emphasis on plant combinations and use of plants as design elements.

Courses in Soil Science

Undergraduate

338. Fundamentals of Soil Science. (Formerly 1438)

Credit 4(2-4)

The fundamental nature and properties of soils and introductory treatment of soil genesis, morphology, and classification and land use.

516. Soil Pedology.

Credit 3(3-4)

A detailed examination of theories and concepts concerning the processes of soil formation and their relationships to various classification schemes. In depth study of concepts treated in Soil Sci. 338. (Prerequisites Soil Sci. 338 and Chemistry 102.)

517. Soil Fertility. (Formerly 1457) Credit 3(3-0)

General principles of soil fertility; influence of chemical, physical and microbiological properties of soils on crop production. Application of fertility principles in cropping programs. Limited treatment of impact of agricultural pollutants on the environment. (Prerequisites Soil Sci. 338, Chem. 101 or consent of instructor.)

518. Soil Fertility Laboratory. (Formerly 1458)

Credit

Analytical and diagnostic procedures in studying soil fertility problems. Some treatment of procedures useful for examination of problems resulting from agricultural pollutants. (Prerequisites Chem. 102, Soil Sci. 338 and 517 or consent of instructor.)

532. Soil Physics.

Credit 4(2-4)

A study of fundamental physical principles and laws which govern the behavior of soils. Physical constitution soil water, and soil air. The relationship of soil physical conditions to plant growth and engineering usage. (Prerequisite: Soil Sci. 338, Chem. 102, and Math. 113 and consent of instructor. Spring terms of even numbered years.)

533. Soil Genesis and Classification. (Formerly 1473)

Credit 4(2-4)

Soil genesis, morphology and classification of the major soil groups of the United States, techniques of making soil surveys; soil survey interpretation for agricultural and non-agricultural uses. Detailed treatment of the Seventh Approximation in soil classification. (Prerequisites Soil Sci. 338 and 516.)

534. Soil Chemistry.

Credit 4(2-4)

Application of physico-chemical principles to soil studies. Consideration of mineral composition, crystal structure, types of bonding, nutrient fixation and ion exchange. The geochemistry of soil pollution. (Prerequisite: Chem. 102, Soil Sci. 338, and consent of instructor. Spring of odd numbered years.)

Advanced Undergraduate and Graduate

609. Special Problems in Soils. (Formerly 1484)

Credit 3(3-0)

Research problems in soils for advanced students. (By consent of instructor.)

Graduate Course in Crop Science

702. Grass Land Ecology. (Formerly 1491)

Credit 3(3-0)

Graduate Courses in Earth and Environmental Science

704. Problem Solving in Earth Science. (Formerly 1493)

Credit 3(0-6)

705. The Physical Universe. (Formerly 1494)

Credit 3(3-0)

706. Physical Geology. (Formerly 1495)

Credit 3(3-0)

708. Conservation of Natural Resources. (Formerly 1496)

Credit 3(3-0)

709. Seminar In Earth Science. (Formerly 1497)

Credit 3(3-0)

Graduate Course in Soils

710. Soils of North Carolina. (Formerly Soils 1499)

COURSES IN POLITICAL SCIENCE

Undergraduate

200. American Government and Politics

Credit 3(3-0)

This course introduces the student to the study of politics through an analysis of major features of the American polity. Topics to be treated include the political self-understanding of Americans, the founding of the political system, the operation of our political institutions, and the forms of political participation.

210. State and Local Government

Credit 3(3-0)

A study of the structure and functions of state and local government in the United States and their relationship within the federal system. Special consideration is given to contemporary problems.

220. Blacks in the American Political System

Credit 3(3-0)

This course is designed primarily to facilitate the development of a frame of reference which will make it possible for students to organize and interpret political phenomena involving Black people living in the United States. Special emphasis is placed on understanding the Black predicament in this country, causes and changes.

333. Introduction to Political Research (Formerly Pol. Sc. 2815)

Credit 3(3-0)

Introduces students to fundamental methods and procedures in the collecting and analyzing of political data. Research on a specific political subject is required.

400. Mass Political Attitudes and Behavior

Credit 3(3-0)

A study of mass political attitudes and their expression in various forms of political activity. Topics include opinion and democratic theory; social, psychological and institutional influences on political behavior; opinion measurement and mass movements.

440. Political Theory (Formerly Pol. Sc. 2940)

Credit 3(3-0)

An in-depth treatment of the growth and development of this area of Political Science and its relevance to the field. The approach considers ancient and medieval thought as a unit and modern political thought as a separate unit.

443. Public Administration (Formerly Pol. Sc. 2944)

Credit 3(3-0)

Emphasis is devoted to basic principles of organization, location of authority, fiscal management, personnel management, forms of administrative action in the public service, technological and managerial advancements. Prerequisite: 200, 210.

444. International Relations (Formerly Pol. Sc. 2945)

Credit 3(3-0)

A comprehensive treatment of the policies and politics of nations; imperialism, colonialism, balance of power, international morality, treaties, sovereignty, diplomacy, tariff, war and other arrangements. Prerequisite: Pol. Sc. 200.

445. Problems of Contemporary Africa (Formerly Pol. Sc. 2815)

Credit 3(3-0)

Consideration of liberation struggles, decolonization and the emerging of independent states, and efforts toward Pan-Africanism since World War II.

446. Politics of the Black African Revolution (Formerly Pol. Sc. 2912)

Credit 3(3-0)

A look at the development of resistance to white colonialism, neo-colonialism, and general international relations.

447. Contemporary American Political Thought (Formerly Pol. Sc. 2917)

Credit 3(3-0)

A study of contemporary American political theories and ideas ranging from William Buckley to Herbert Marcuse and Stokely Carmichael to Martin Luther King. Emphasis will be placed on the understanding, studying, evaluating, and meaningful alternative to our present government.

448. Politics of Transportation

Credit 3(3-0)

Analysis of political roots of various transportation problems such as highway

location issues, mass transit bond issues, and politics of transportation innovation. The working mechanisms of federal, state and local transportation related units will also be considered. Case studies of local, regional and national issues will be included. Prerequisite: Junior status.

504. Independent Sudy

Credit 3(3-0)

Senior Political Science majors who have exhibited facility for independent study and attained a minimum grade point average of 3.0 in their major may arrange to investigate an area not covered in the regular curriculum.

Permission of the supervising instructor and the Department Chairperson is

required.

505. Honors Seminar in Political Science (Formerly Pol. Sc. 2816)

Credit 3(3-0)

For superior students (seniors). A thorough examination of selected political works, primarily paperbacks. A treatment of selected political philosophies and ideas for informal discussion. Several critical reviews will be required.

540. American Foreign Policy (Formerly Pol. Sc. 2964)

Credit 3(3-0)

An analysis of principles and problems of American Foreign Policy from 1789 to the present. Prerequisite: Pol. Sc. 200.

541. Party Politics and Pressure Groups (Formerly Pol. Sc. 2965)

Credit 3(3-0)

This course deals with modern political parties in the United States as instruments of popular government. Special emphasis is placed upon party structure, functions and operations as it relates to the Negro. Prerequisite: Pol. Sc. 200.

542. American Constitutional Law (Formerly Pol. Sc. 2966)

Credit 3(3-0)

A case study of major Supreme Court Decisions, the Judiciary, the Congress, the President, the Federal System, the First Amendment Freedoms and Due Process Rights.

544. International Organization (Formerly Pol. Sc. 2968)

Credit 3(3-0)

This course analyzes the role of the international organization in world politics. Particular emphasis is given to the various approaches of international organizations in fostering peace and economic and social cooperation. Some attention will be given to the United Nations system as well as such defense, political, and economic arrangements as NATO, OAS, SEATO and the European Communities.

Courses for Advanced Undergraduates and Graduates

640. Federal Government (Formerly Pol. Sc. 2976)

Credit 3(3-0)

After a brief review of the structure and functions of the federal government, this course concerns itself with special areas of federal government: problems of national defense, the government as a promoter, the government as regulator, etc. Students will engage in in-depth study in one of the specific areas under consideration.

641. Seminar in State Political Problems (Formerly Pol. Sc. 2977)

Credit 3(3-0)

An in-depth study of special problems connected with operations of state and local governments.

642. Modern Political Theory (Formerly Pol. Sc. 5973)

Credit 3(3-0)

Includes selected political works for adherence to modern conceptions of the state, political institutions as well as the works of Machiavelli, Hobbes, Spinoza, Rousseau, Burke, Mill, Hegel, Marx, and Dewey.

643. Urban Politics and Government (Formerly Pol. Sc. 5975)

Credit 3(3-0)

A detailed analysis of the urban political arena including political machinery, economic forces and political structures of local governmental units.

644. International Law (Formerly Pol. Sc. 543)

Credit 3(3-0)

A study of the major principles and practices in the development of the Law of Nations, utilizing significant cases for purposes of clarification. Prerequisites: Pol. 200.444.

645. American Foreign Policy—1945 to present (Formerly Pol. Sc. 2976)

Credit 3(3-0)

Examination of forces and policies that have emerged from Potsdam, Yalta, and World War II. Emphasis will be on understanding the policies that were formulated, why they were formulated, the consequences of their formulation, and the alternative policies that may have come about. Prerequisties: Survey course in American history, American Diplomatic History, and consent of instructor.

646. The Politics of Developing Nations (Formerly Pol. Sc. 5974)

Credit 3(3-0)

Political structures and administrative practices of selected countries in Africa,

Latin America, Asia, analysis of particular cultural, social and economic variables peculiar to the nations.

647. Research and Current Problems

Credit 3(3-0)

Study of selected problems of current importance with an emphasis on the application of scientific methods of research and analysis.

653. Urban Problems

Credit 3(3-0)

Analysis of some of the major problems in contemporary urban America. The course includes an examination of their causes, effects and possible solutions.

Courses For Graduates Only

(For descriptions see Bulletin of the Graduate School).

-	Constitutional Development Since 1865 (Formerly Pol. Sc. 2896)	Credit 3(3-0)
,	Government Finance (Formerly Pol. Sc. 2898)	Credit 3(3-0)
	Comparative Government (Formerly Pol. Sc. 2899)	Credit 3(3-0)
	Research and Current Problems (Formerly Pol. Sc. 2980)	Credit 3(3-0)
	Readings in Political Science (Formerly Pol. Sc. 5985)	Credit 3(3-0)

COURSES IN PSYCHOLOGY

100. Orientation to Psychology

Credit 1(1-0)

A personal orientation to the department and an initial exposure to the major area of study. For example, an introduction to the departmental requirements, faculty, interests, professional opportunities, and their implications for behavioral careers.

320. General Pyschology

Credit 3(3-0)

An introduction to psychology as a life science especially designed for the major in areas other than psychology. Topics given major consideration include maturation and development; motivation, emotion, and personality; mental health, intelligence and aptitude; perception and attention; learning, forgetting, language, and thinking; social influence, attitudes, and beliefs, and vocational adjustment.

321. Elementary Psychology

Credit 3(3-0)

An introduction to psychology as a behavioral science required of the major in psychology with enrollment restricted to such majors. Major areas of consideration include maturation and development, nervous system and internal environment; physiological basis of behavior; motivation, emotion, and personality; and psychological testing.

322. Statistical Methods

Credit 3(2-2)

Analysis and interpretation of research data. Descriptive statistics (frequency distributions, centrality, variability, and correlation of measures), introduction to statistical inferences (normal curve sampling theory, chisquare tests of statistical hypotheses, t-tests, analysis of variance, Scheffe test ratio).

324. Developmental Psychology I

Credit 3(3-0)

A comprehensive study of the physical, social, emotional, personality, language, and intellectual development of the child from birth through early childhood.

325. Developmental Psychology I

Credit 3(3-0)

A continuation of Developmental Psychology I with emphasis on the periods of middle childhood through adolescence.

326. Developmental Psychology III

Credit 3(3-0)

A study of those psychological processes of development occurring from the end of the period of adolescence and extending through the remaining life span, thus including early, middle, and late adulthood and senesence or old age. Considerations will be given to physical, cognitive, and social aspects, sex, personality traits, change of lives, retirement, and the process of aging.

420. Social Psychology

Credit 3(3-0)

An introduction to the study of the behavior of the individual in relation to factors in his social environment. Socialization, enculturation, attitude formation and modification, social influence on perceptual and conceptual processes, and social interaction.

434. Abnormal Psychology

Credit 3(3-0)

Behavior deviations and psychological disorders occurring during the several

developmental stages; basic concepts employed in psycho-pathology, mental hygiene, and psychiatry.

437. Mental Hygiene

Credit 3(3-0)

A study of basic principles of adjustment and mental hygiene.

439. Theories of Personality

Credit 3(3-0)

Contemporary theoretical formulations of the structure and development of personality and their empirical bases.

440. Introduction to Psychological Research

Credit 3(2-2)

A survey of various research methods with an emphasis on experimental design, instrumentation, and the collection, analysis, interpretation, and reporting of research data. (Prerequisite: Psy. 322 or equivalent)

441. Information Processing

Credit 3(3-0)

Visual and auditory perception and processing, pattern recognition and attention, memory and language, problem solving, decision making, and thinking.

444. Applied Psychology

Credit 3(3-0)

The utilization of psychological principles in five areas of American culture; effectively training new generations; maintaining mental health; administering justice; promoting economic progress; and facilitating efficient production.

445. Industrial Psychology

Credit 3(2-2)

A consideration of the significance of individual differences in industry; employee selection and training; reduction of monotony and fatigue and the promotion of efficiency; accident prevention; psychological factors in employee turnover.

500. Independent Study

Credit 3

Independent study on a specific topic or area in behavioral science. (Prerequisite: permission of instructor)

540. Physiological Psychology

Credit 3(3-0)

A study of the physiological and chemical processes (and their anatomical substrates) that intervene between the arrival of sensory impulses in the central nervous system and the elaboration of responses to them. (Prerequisite: Zoology 461)

541. Psychology of Learning

Credit 3(3-0)

A general survey of those changes in performance as a function of practice subsumed under the label "learning". Consideration is given to the basic con-

trolling variables; individual responses; such interactions of learned responses as chaining and transfer of training; and processes under the control of implicit and mediating activity such as retention and problem solving.

542. Seminar in Psychology

Credit 3(3-0)

A study of selected major systematic views and theoretical issues in psychology. Each student participates in supervised research in psychological journals and other materials leading to an oral presentation and written paper on a substantive view or issue in psychology.

544. Psychological Testing

Credit 3(2-2)

Emphasizes the principles of measurement of psychological attributes: an examination of factors essential for a reliable and valid measuring instrument with an emphasis on the important role they play in producing their effects. There will be discussion and preclinical experiences with the more valid tests available in the areas of personality; aptitude, attitude, interests, and intelligence testing. (Prerequisite: Psychology 322, Statistical Methods)

545. History and Systems in Psychology

Credit 3(3-0)

A survey of the philosophical and scientific origins of contemporary theories of behavior including consideration of the schools and systems of thought which have emerged.

610. Manpower Internship

Credit 3

Off-campus cooperative assignments monitored and coordinated by University and Departmental personnel. (Prerequisite: permission of instructor)

645. Behavior Modification

Credit 3(3-0)

A survey of relevant research and techniques making use of either learning theory or behavior principles in the treatment of deviant behavior. Special emphasis is placed on the use of operant conditioning procedures in the prevention and treatment of abnormal behavior.

COURSES IN SAFETY AND DRIVER EDUCATION

Undergraduate

254. Basic Safety and Driver Education

Credit 3(2-2)

This course in designed to present the traffic problem in today's society with an overview of the concepts used in traffic accident prevention. Human, vehicle, and environmental factors are studied in their relationship to the total problem. Laboratories experiences will be designed to improve driving attitudes, skills, and knowledge.

353. Techniques of Laboratory Instruction

Credit 3(2-2)

This course is designed to provide the student with the techniques of the in-car, simulation, and range methods of laboratory instruction. Practical experience with beginning drivers will be arranged. Prerequisite: S.D.Ed. 254.

356. Behavioral Aspects of Accident Prevention.

Credit 3(3-0)

This course is designed to study the philosophical and theoretical bases of accident prevention efforts in various areas of activities. The behavioral task is analyzed from the physiological, medical and physical, psychological, sociological, and cultural aspects. A critical analysis of attempt to affect safe behavior. Evaluation and written reports required. Planned in consultation with instructor. Prerequisite: S.D.Ed. 353.

454. First Aid and Emergency Care of the Injured.

Credit 3(3-0)

A combination of methods and procedures for the emergency care of the injured with special emphasis on the traffic related problems. First aid care, emergency care during disaster, transportation of the injured, and civil defense are stressed.

455. Legal Aspects in Safety Education.

Credit 3(3-0)

A study of federal and state laws and judicial interpretations, having application to school, industrial, and traffic programs, will be stressed. Problems such as teacher liability, workmen's compensation, insurance, and traffic laws will be dealt with in respect to their involvement with the industrial and school traffic safety program. (Consultation with instructor.)

456. Alcohol and Drugs—In Safety and Driver Education. Credit 3(3-0)

This course will consist of an investigation into the physiological, psychological, and sociological problems presented by the use of alcohol and drugs. The problem of alcoholism and drug addiction will be treated; efforts of cure and rehabilitation will be explored. Emphasis on the role of alcohol in traffic safety and the role of the school in alcohol education.

555. Shop Safety Education.

Credit 2(2-0)

This course provides the necessary lesson units and methods of teaching school shop safety, as well as plans for developing complete shop safety education programs.

557. Police and Traffic Court Administration.

Credit 3(3-0)

A study of the police and court functions in traffic administration with emphasis on records, direction and control, accident investigation, and procedures. Some attention will also be given to parking, pedestrian control, and violations bureau operation. Prerequisite: S.D.Ed. 455.

558. Introduction to Highway Traffic Administration.

Credit 3(3-0)

Examination of the United States' highway system, emphasizing efficient safe operation; activities and agencies concerned with increasing efficiency; and systems' development, components, social, economic and political impact. Survey of present and future needs. (Consent of instructor.)

561. Methods of Teaching Safety and Driver Education.

Credit 3(2-2)

Emphasis is placed on methods and techniques of teaching Safety and Driver Education in the high schools. Areas of investigation include classroom, in-car, range, and simulation methods of instruction. Programmed instruction, team teaching, and other innovative methods will be examined with a view to their use in driver education programs. Organization and administration of the high school program will also be covered. Prerequisite: S.D.Ed. 356.

Advanced Undergraduate and Graduate Courses

651. Driver Ed. and Teacher Training.

Credit 3(2-2)

This course provides the student with the necessary preparation to administer the in-car phase of high school driver education. Special attention will be given to methods of developing safe driving skills and habits.

652. Advanced Driver Education and Teacher Training. Credit 3(2-2)

Advanced professional preparation in teaching driver education. Laboratory experiences with the multiple car range and driving simulator. Prerequisite: S.D.Ed. 651 or its equivalent.

653. Driver Education and General Safety.

Credit 3(3-3)

Designed to present facts and information concerning the cost, in money and human suffering, of accidents in the home, industry, school, and transportation. Included is the establishment of knowledge and background conductive to the development of personal activities and practices which reduce accidents.

654. Highway and Transportation Systems.

Credit 3(3-0)

A description and analytical study of the various transportation systems that have developed in this country. Special emphasis will be given to transportation and its role on economic and socil development of communities within this country.

655. Automotive and Technology for Safety and Driver Education.

Credit 3(2-2)

A study of the functional systems of the automobiles as they relate to traffic safety.

656. Highway Traffic Administration.

Credit 3(3-0)

This course is to study the origin of traffic laws, the administration of motor vehicles and the adjudication resulting from traffic offenses. A critical analysis of traffic management procedure: past, present, and future. Also explore the agencies involved with traffic study. (Consent of instructor.)

657. Traffic Engineering in Safety and Driver Education.

Credit 3(3-0)

An investigation of the vehicle and environmental components of the various types of highway transportation systems. Particular emphasis is given to highway engineering in relation to the flow of traffic in congested and non-congested areas. Traffic studies are performed within the traffic engineering functions, and traffic planning to improve the efficiency of traffic flow and control, and to meet future needs of society.

658. Curricula Integration of Safety Education.

Credit 3(3-0)

Integration of safety concepts and principles in the kindergarten through grade twelve curricula. Philosophy and psychology of safety; strategies, techniques, and materials appropriate for the various grade levels.

659. Motorcycle Safety Education.

Credit 3(2-2)

Theory and laboratory sessions in motorcycle safety education. Emphasis on laws, maintenance, skills, and safe riding habits and practices.

COURSES IN SECONDARY EDUCATION AND CURRICULUM

Undergraduate Courses

300. Introduction to Education.

Credit 2(2-0)

An overview of the historical background of the systems of education in the United States, their aims, organization and procedures, and of the principles and practices on all levels of the American educational system; emphasis on North Carolina.

301. Philosophical and Sociological Foundations of Education.

Credit 2(2-0)

A view of the educative process and its philosophical foundations: emphasis on the philosophical implications of education as they relate to the student curriculum, teacher, and the institution.

302. Field Experiences and Community Services.

Credit 1-3

Field experiences as tutor, assistant, participant or employee in a school or education related institution, organization, agency, community, church, business or industrial program involving interaction with children, youth or adults. Evaluation and written reports required. Planned in consultation with an instructor.

303. Socio-Philosophical Aspects of Education.

Credit 4(4-0)

An examination of past and contemporary factors in American Education through philosophical and sociological perspectives. Exploration of problems and possibilities inherent in relating theory and practice in education.

343. Methods and Materials of Bibliography.

Credit 2(2-0)

An examination and valuation of the principles and methods of bibliographic planning with emphasis on liberary skills and research techniques.

400. Psychological Foundations of Education—Growth & Development. Restricted to Teacher Education Students

Credit 3(2-2)

Psychological principles governing the interests and needs of pre-adolescence and adolescene; emphasis is placed on general principles of growth and development; physical, motor, intellectual, social, emotional and moral aspects. Observing, recording and interpreting human behavior including functional conceptions of learning will be provided in laboratory settings. Prerequisites: Psychology 320. Education 300, 301.

402. Extramural Studies I.

Credit 1-3

Off-campus experiences, testing or exploring relevance of education to real world situations in an agency, organization, institution or business. Project report and evaluation by permission of department.

413. Learning and Practice.

Credit 3(3-0)

Survey and analysis of learning theories and the learning process with applications to education. Integration of theoretical viewpoints and research findings with observations and experience in classroom situations. Prerequisite: Psychology 320.

436. Tests and Measurements.

Credit 3(2-2)

A basic study of standardized and teacher-made measuring devices, ac-

ceptable methods of selecting, administering, and interpreting all types of tests applicable to the school and classroom.

500. Principles and Curricula of Secondary Schools. Credit 3(3-0)

The history, nature, and function of the secondary school and its relationship to the elementary school and adult life. Prerequisite: 12 semester hours in education and psychology.

501. Methods of Research and Evaluation in Health and Physical Education. Credit 2(1-2)

The use of various research methods as applied to health education and physical education and the study of methods of evaluating biological social, and physiological outcomes for health education and physical education. Elementary statistical procedures are utilized. Prerequisite: Education 436.

525. Methods of Teaching Art.

Credit 3(3-0)

A study of aims, objectives, methods and techniques of art teaching in the modern schools. Special attention given to planning courses of material and correlation. Required of those wishing to qualify as art teachers. Prerequisites: 30 hours of Art and 15 hours of Education and Psychology.

526. Methods of Teaching English.

Credit 3(3-0)

A study of materials and methods of teaching English in the high school Required of those planning to teach English. Prequisites: English 450, 430; 24 additional hours of English courses above English 100 and 15 semester hours in Education and Psychology.

527. Methods of Teaching Foreign Languages.

Credit 3(3-0)

A study of the problems and strategies in teaching foreign languages. Special attention given to the matter of classroom aids, equipment, etc. Required of those students planning to teach the subject. Prerequisites: 27 hours of French and 15 semester hours of Education and Psychology.

528. Methods of Teaching Home Economics.

Credit 3(3-0)

A study of the objectives, methods, and techniques necessary for teaching vocational home economics on the secondary level.

529. Methods of Teaching Mathematics.

Credit 3(3-0)

An evaluation of subject matter, materials, methods, and techniques and objectives in the teaching of mathematics in the junior and senior high school. Required of those planning to teach the subject. Prerequisites: 30 hours of mathematics and 15 hours of Education and Psychology.

530. Public School Music Methods

Credit 2(2-0)

A comprehensive study of materials and methods in the teaching of public school music.

531. Vocal Methods and Materials.

Credit 3(3-0)

The teaching of vocal music in the public schools; vocal literature for vocal combinations in the public schools.

532. Band Methods.

Credit 3(3-0)

A study of school band organization and administration (Fall).

533. The Teaching of Physical Education.

Credit 2(1-2)

A study of materials, methods and practice in planning; organizing and conducting physical education class activities. Prerequisites: Physical Education 446 and an adequate number of other physical education courses.

534. The Teaching of Health Education.

Credit 2(2-1)

Methods, materials and procedures for the teaching of health in the elementary and secondary schools. Prerequisites: Health Education 220 and 442.

535. Methods of Teaching Science.

Credit 3(3-0)

A study of methods, materials and techniques of teaching Biology, Chemistry, Physics, General Science, and Environmental Science in the high school. Required of all those planning to teach in this field. Prerequisites: 27 hours of Science and 15 semester hours of Education and Psychology.

536. Method of Teaching Social Sciences.

Credit 3(3-0)

A study of techniques of social science instruction on the high school level. Required of those planning to teach the subject. Prerequisites: 27 hours of Social Studies and 15 semester hours of Education and Psychology.

539. Methods of Teaching Speech and Theatre.

Credit 3(3-0)

A study of the aims, objectives, problems and difficulties experienced in teching speech in the modern school. Special attention is given to the organization and coordination of both speech and theatre curriculums, to planning courses of study, its presentation, and to the selection of materials and equipment required of all Speech and Theater Education majors. Prerequisites: 27 hours of speech and 15 hours of Education and Psychology.

560. Observation and Student Teaching.

Credit 6(2-8)

The application and practice of methods, techniques, and materials of instruction in a real classroom situation under supervision, includes purposeful observation; organization of teaching materials; participation in other activities which will aid in developing a teacher (guidance activities, child accounting, cocurricular activities, parent-teacher associations, teachers' meetings), and ninety or more clock hours of actual teaching. Prerequisites: Overall GPA of 2.00 in both the professional and major components and approval of major department.

561. Seminar.

Credit 1(1-0)

A consideration of selected topics and current trends in the field of education.

Advanced Undergraduate and Graduate

602. Extramural Studies II.

Credit 1-3

Off-campus experiences with educational programs of agencies, organizations, institutions or business which gives first hand experiences with youth and adults and aspects of education. Project report and evaluation by permission of department.

605. Concepts of Career Education.

Credit 3(3-0)

Career Education and manpower concepts in a changing society with emphasis on career awareness, career exploration, and career preparation for kindergarten through the postsecondary level. Development of career education models and evaluation schema.

606. Curricular Integration of Career Education.

Credit 3(3-0)

Integration of Career Education within subject content areas. Special attention to mathematics, social science, science, humanities, and career-oriented programs.

607. Administration of Career Education Programs.

Credit 3(3-0)

The organization and implementation of Career Education Programs. Includes methods and models for inservice training for teachers and counselors. Evaluation of Career Education Programs.

608. Seminar in Career Education.

Credit 3(3-0)

Review of literature, research, issues and problems in Career Education.

625. Theory of American Public Education.

Credit 3(3-0)

An examination of the philosophical resources, objectives, historical influences, social organization, administration, support, and control of public education in the United States.

626. History of American Education.

Credit 3(3-0)

A study of the historical development of education in the United States, emphasizing educational concepts and practices as they related to political, social and cultural developments in the growth of a system of public education.

627. The Afro-American Experience in American Education.

Credit 3(3-0)

Lectures, discussions, and research in the Afro-American in American

education, including the struggle for literacy, contributions of Afro-Americans to theory, philosophy and practice of education in the public schools, private and higher education. Traces the development of school desegregation, its problems and plans.

628. Seminar and Practicum in Urban Education. Credit 3(1-4)

A synthesis of practical experiences, ideas and issues pertinent to more effective teaching in urban areas.

641. Teaching the Culturally Disadvantaged Learner. Credit 3(3-0)

Psychological and sociological influences on culturally deprived learners and their development; emphasis on the experiential lacks of the culturally deprived learner; and special teaching methods, materials and activities. A consideration of groups of American Indians, Negroes, Puerto Ricans, urban poor, rural poor. Mexican Americans, Mountain whites, and migrant workers who may be culturally deprived.

Graduate Courses

These courses are open only to graduate students. For descriptions see the Graduate School Bulletin.

700.	Introduction to Graduate Study.	Credit 2(2-0)
701.	Philosophy of Education	Credit 3(3-0)
702.	Reading in Modern Philosophy Education.	Credit 3(3-0)
703.	Educational Sociology.	Credit 3(3-0)
710.	Methods and Techniques of Research.	Credit 3(3-0)
711.	Educational Statistics.	Credit 3(3-0)
720.	Curriculum Development.	Credit 3(3-0)
722.	Curriculum in the Secondary School.	Credit 3(3-0)
723.	Principles of Teaching	Credit 3(3-0)
724.	Problems and Trends in Teaching Science.	Credit 3(3-0)
725.	Problems and Trends in Teaching Social Science.	Credit 3(3-0)
727.	Workshop in Methods of Teaching Modern	
	Mathematics for Junior and Senior High School Teachers	Credit 3(3-0)
780.	Comparative Education.	Credit 3(3-0)
782.	Issues in Secondary Education.	Credit 3(3-0)

784. Current Research in Secondary Education.	Credit 3(3-0)
S785. Independent Readings in Education I	Credit 1(0-2)
S786. Indepedent Readings in Education II	Credit 2(2-4)
S787. Independent Readings in Education III	Credit 3(0-6)
S790. Seminar in Educational Problems.	Credit 3(1-4)
S791. Thesis Research.	Credit 3

COURSES IN SOCIOLOGY & SOCIAL SERVICE Courses in Sociology

100. Principles of Sociology

Credit 3(3-0)

Basic concepts and principles in Sociology as they are used to examine patterned and recurrent forms of social behavior.

101. Basic Quantitative Analysis in Sociology

Credit 1(0-3)

A laboratory course to be taken concurrently with \$100, Principles of Sociology. It is designed to provide students with a basic understanding of the descriptive and summary techniques utilized to analyze Sociological Data.

204. Social Problems

Credit 3(3-0)

Major social problems in American society and their relationship to social structures. Prerequisite: Sociology 100, concurrent, Statistics

301. Origins of Social Thought.

Credit 3(3-0)

Review of the major historical sources, nature and growth of social thought. An introduction to the emergence of Sociological Theory in Europe and America in the 19th and early 20th centuries.

302. Social Statistics I

Credit 3(3-2)

An introduction to elementary statistical reasoning. Prerequisite or concurrent: Sociology 100.

303. Social Statistics II

Credit 3(3-2)

An introduction to elementary statistical reasoning. Prerequisite or concurrent: Sociology 100.

304. Social Aspects of Human Sexuality

Credit 2(2-0)

Social aspects of human sexuality. American sexual behavior and its influence on life styles. Emphasis will be on social roles.

305. Reading for Honors in Sociology

Credit 3(3-0)

Intensive and extensive library research on topics in Sociology. Prerequisite: "B" average.

308. The Family

Credit 3(3-0)

The family as a social institution, and family types in cross cultural perspective.

312. Major Problems of Family Functioning.

Credit 3(3-0)

This course examines the dynamics of families experienceing major dysfunctions related to poverty, violence, the effects of deviant family members, and the social programs and policies relating to these problems areas. This course will enhance the student's social work practice with families by increasing understanding of dysfunctional effects of these problems on the family system and its individual members and the relationship of policies and programs to the enhancement or deterioration of family life. Prerequisite: \$308.

313. The Community

Credit 3(3-0)

A study of the social areas commonly defined as communities, and analyses of the social processes that occur within their boundaries.

323. Introduction to Family Therapy

Credit 3(3-0)

Designed to introduce the student to the rapidly developing field of family therapy. A brief overview of family therapy theory will be presented, along with explanation of the similarities and the difference with other therapies. Several models of practices and technique will be presented. Prerequisites: \$308, \$312, \$\$334.

402. Social Theories

Credit 3(3-0)

Social thought and theory in its development from Comte to the present. Prerequisite: Sociology 302.

403. Research Methods I

Credit 3(3-0)

Techniques used in social research. Prerequisite or concurrent, Sociology 301.

406. Criminology

Credit 3(3-0)

Genesis and origin of crime and an analysis of theories of criminal behavior. Prerequisite: Six (6) hours of Sociology and/or Social Service.

408. Independent Study I

Credit 3(0-9)

Independent research on a specific topic or a delineated area in Sociology. Prerequisite: Permission of instructor. (May be used in place of Sociology 403.)

501. Social Stratification

Credit 3(3-0)

A study of social inqualities and differentiation as related to social structures and social systems. Prerequisite: Sociology 302.

503. Juvenile Delinquency.

Credit 3(3-0)

A study of the prevalence, trends and treatment of juvenile delinquency.

671. Research Methods II

Credit 3(3-0)

Continuation of 403. Prerequisite: Senior or graduate standing; minimum of 6 to 9 credits in statistics and research.

672. Selected Issues in Sociology

Credit 3(3-0)

Topics of current interest to sociologists and the student body are explored.

673. Population Studies

Credit 3(3-0)

The study of social structural causes, correlates, and consequences of population trends.

674. Evaluation of Social Programs

Credit 3(3-0)

Theoretical, methodological and substantive aspects of program evaluation.

COURSES IN SOCIAL SERVICE

133. Social Professions, Fields and Services

Credit 3(2-2)

Course is designed to introduce students to the human services professions with emphasis on Social Work as a profession. It explores the human service professions from historical, sociological, political and economic viewpoints.

210. Professional Relationship Skills

Credit 2(2-0)

This course is designed to provide the student with an understanding of the effective dimensions present in the helping process and an opportunity to learn and practice the skills. The course will be helpful to students entering social work, guidance and counseling, teaching, and nursing. It should be taken prior to field placement for B.S.W. students. Prerequisites: SS133 or consent of instructor.

306. Social Functioning and Human Development Credit 3(3-0)

Selected aspects of social responses to growth, health, disease and disability. Prerequisite: 133.

307. Field Instruction I.

Credit 5(0-16)

Supervised learning experiences in selected agencies and settings. Prerequisite or concurrent 306, 334, 333.

309. Disability and Employment

Credit 3(3-0)

This course will focus on selected mental, physical, and social disabilities, and their implications for coping and employment.

318. Practicum in the Community

Credit 5(0-16)

Selection of a community problem; study and analysis of the problem followed by corrective activities, when possible. Prerequisite: consent of the instructor.

320. Reading for Honors in Social Welfare

Credit 3(3-0)

Extensive library research in selected areas of social welfare. Prerequisite: Sophomore standing, "B" average.

325. Honors Seminar in Social Service

Credit 3(3-0)

Selected topics in social welfare are extensively studied and discussed. Prerequisite: "B" average, junior standing.

333. Social Welfare

Credit 3(3-0)

Social Welfare legislation and policy. Prerequisite: 133.

334. Social Work Methods I.

Credit 3(3-0)

Exploration of components of social work practice with emphasis on skill in practice as a generalist. Concurrent 307. Prerequisite or concurrent: 306, 333.

372. Child Welfare I

Credit 3(3-0)

This course is designed to offer students an opportunity to develop cognitive skills as they relate to the history and development of Child Welfare. Students will review needs of children and evaluate the extent to which parents/society are able to meet their needs.

373. Child Welfare II

Credit 3(3-0)

An examination of philosophies and institutional systems that impact on child welfare. This course will examine influences of such issues as racism, sexism, women's lib, and child advocacy. Major institutions (educational, court/legal, health care, economic, political) will be examined to identify and evaluate effects. Prerequisite: None.

374. Institutional Services for Children

Credit 3(3-0)

A study of the primary resources available for children. Emphasis will be placed on the characteristics of children needing help and the adequacy/in-

adequacy of community programs. Attention is given to the cooperative nature of these programs as well as the auspices, standards and policies. Prerequisites: None.

520. Field Instruction II

Credit 5(0-16)

Prerequisite: 306, 307, 333, 334. Concurrent 571.

525. Independent Study

Credit 3(0-9)

Independent research in a delineated area of social welfare. Prerequisite: Consent of instructor.

571. Social Work Methods II

Credit 2(2-0)

Continuation of 334 with deepening of social work skill. Attention is given to selected models of practice as a generalist.

*Full time social work students are required to register for 306, 307, 333, 334 concurrently. Part-time students with faculty approval may complete 306, 333 prior to registering for 307 and 334.

Courses in Anthropology

200. Introduction to Anthropology

Credit 3(3-0)

An analysis and comparison of primitive cultures; further comparisons with modern cultures.

300. Topics in Cultural Anthropology

Credit 3(3-0)

Selected topics in language, culture, mythology, and religion designed to acquaint students with analyzing cultural patterning in this and other cultures.

Human Evolution in Ecological Perspective

Credit 3(3-0)

Examines human cultural and biological evolution using an ecological perspective.

603. Introduction to Folklore

Credit 3(3-0)

Basic introduction to the study and appreciation of folklore.

650. Independent Study in Anthropology

Credit 3(3-0)

Enables the student to do readings and research in anthropology in cooperation with the instructor.

651. Anthropological Experience

Credit 3(2-2)

An exploration of anthropological theories and research methods with an emphasis on qualitative research methods.

701. Seminar in Cultural Factors in Communication

Credit 3(3-0)

Course is designed both to sensitize the student to the importance of cultural factors in non-verbal and verbal communication and to equip the student with ways to record and analyze this behavior.

INTRA-DEPARTMENTAL COURSES

310. Medical Sociology

Credit 3(3-0)

Sociological analysis of medical services, the role of the sick, professional organizations and quasi professional groups; socializational structure of hospitals; sociodemographic and socioepidemiologic variables in relation to modern societies. Cultural and cross-cultural customs and traditions affecting attitudes toward health and the healing art. Prerequisite: Sociology 100.

311. Sociology of Mental Health

Credit 3(3-0)

Sociocultural variation in the assessment of sociopathological and psychopathological aspects of mental disorder. A critical analysis of institutions of mental health care, consideration of the etiology of mental illness, typologies, and social policies relative to the phenomenon of mental health. Prerequisite: Sociology 100.

314. Black Experience

Credit 2(2-0)

A topical seminar focusing on commonly shared experiences of American Blacks in selected social institutions. Prerequisite: Junior standing.

370. Aging in Society

Credit 3(3-0)

Aging and its implication in social institutions. Prerequisite: Junior standing.

515. Independent Study II

Credit 3(0-9)

Prerequisite: Six (6) hours of statistics, and/or research.

570. Senior Seminar

Credit 1(1-0)

Research and discussion of professional, and field issues related to careers in Sociology and in Social Service. Prerequisite: Senior standing.

600. Seminar in Social Planning

Credit 3(3-0)

Personal and social values as related to social planning: "systems" theories program planning and evaluation. Prerequisite: Senior or graduate standing.

601. Seminar in Urban Studies

Credit 3(3-0)

An analysis of the nature and problems of cities, urban society and urban development.

625. Sociology/Social Service Internship

Credit 5(0-5)

An internship to provide opportunities for students to enhance their employability by supervised experiences in selected agencies.

669. Small Groups

Credit 3(3-0)

Elements and characteristics of small group behavior and process. Prerequisite: Senior or graduate standing; permission of instructor.

670. Law and Society

Credit 3(3-0)

This course examines selected and representative forms of social justice and injustices; barriers to and opportunities for legal redress, as related to contemporary issues. Prerequisite: Senior or graduate standing.

COURSES IN SPEECH COMMUNICATION

DESCRIPTION OF COURSES

216. Voice and diction laboratory.

Credit 1(0-2)

Supervised practice with the aid of an electronic laboratory in the development of speech intelligibility and an adequate speaking voice. For students whose professional pursuits require above average proficiency in articulation, pronunciation, and voice management; or for students whose substandard speech and voice patterns may come from cultural disadvantages, and for foreign students who wish to increase the intelligibility of their spoken American English. Prerequisite: Consent of the instructor.

*250. Speech fundamentals.

Credit 2(2-0)

An introduction to the rhetorical, psychological, physiological, phonetic, linguistic, and communication bases of oral discourse. Preparation and practice in public communication and interpersonal communication.

*251. Public speaking.

Credit 3(3-0)

A study of the methods by which public speeches are made clear, interesting and forceful; practice in writing and delivering speeches according to the audience and occasion. Prerequisite: Speech 250.

^{*} General Education courses

*252. Argumentation and debate.

Credit 3(3-0)

Study and practice in analysis, gathering of material, briefing, ordering of arguments and evidence, refutation, and delivery. Prerequisite: Speech 250.

*253. Parliamentary Procedures.

Credit 2(2-0)

Theory and practice in the rules and customs governing the organization and proceedings of deliberative bodies. Prerequisite: Speech 250.

255. Radio Production I.

Credit 3(3-0)

Practical experience in radio broadcasting techniques and conventional studio practices; projects in radio announcing and acting, creative dramatics, commercial announcements, variety shows, and verse reading. Programs planned and executed by the students. Prerequisite: Speech 250.

256. Television Production I.

Credit 3(3-0)

Methods and techniques in television production, directing and announcing; program design, lighting, audio, camera, and electronic techniques. Laboratory practice.

260. Minorities in Mass Media.

Credit 3(3-0)

An overview of past and present minority contributions in the areas of major motion pictures, radio, television, newspaper and magazine. This course will also present a close look at minority roles in contemporary media development, with emphasis on possible career opportunities for minorities. (Survey course).

335. Rhetoric of American Thought.

Credit 3(3-0)

A critical study of selected American orators—their speech making on controversial social and political issues from 1830-1960, as well as the impact upon their audiences. Black American orators included. Prerequisite: Speech 250.

340. Phonetics.

Credit 3(3-0)

Broad transcription: The International Phonetic Alphabet; Standards of pronunciation; dialectal variations in America; physiological and acoustical bases of speech sounds. Prerequisite: Speech 250 or consent of instructor.

350. Radio Production II.

Credit 3(3-0)

Broadcast announcing styles and advanced principles of articulation, building vocabulary skills and pronunciation. It will also include preparation for acquiring the FCC Third Class Operators License. Prerequisite: Successful completion of Speech 255.

^{*}General Education courses

351. Television Production II.

Credit 3(3-0)

Theories and methods of producing, writing and directing the various types of television shows, including the use of the elements of film and slides. Students will be expected to produce, write and direct selected program types i.e., news, public affairs, drama, documentary, variety, and talk. Prerequisite: Successful completion of Speech 256.

380. Introduction to Speech Pathology.

Credit 3(3-0)

A study of the causes, symptoms, and treatment of minor speech disorders, basic theories underlying speech correction. Aimed at preparing the classroom teacher to identify common speech disorders and to make referrals to speech therapists. Observation of speech clinics.

404. Voice and Articulation Disorders.

Credit 3(3-0)

Consideration of theories, principles, and procedures for appraisal and treatment of voice and articulatory deviations. Prerequisite: Speech 380 and consent of the instructor.

407. Introduction to Audiology.

Credit 3(3-0)

A study of hearing, both normal and abnormal, with information on the nature, causes, identification and rehabilitation treatment of persons with hearing disorders. Prerequisite: Advanced standing; juniors and seniors, and consent of instructor.

415. Anatomy and Physiology of the Ear and Vocal mechanism.

Credit 3(3-0)

A study of the organs and systems of the body related to the processes of hearing and speech. Prerequisite: Juniors and seniors or consent of the instructor.

420. Group Discussion.

Credit 3(3-0)

A study of the forms of discussion and the principles and methods underlying them. Practice in leading and participating in discussion situations. Prerequisite: Speech 250.

421. Oral Reading and Interretation

Credit 2(2-0)

A study of the analysis and the oral interpretation, of the forms of classical and modern literature, e.g. poetry, narrative prose, the essay, and dramatic literature. Oral practice in individual and group projects.

425. Principles of Audiometry.

Credit 3(3-0)

A study of the techniques of hearing assessment in clinical, educational, industrial, and medical settings; interpretation of test results. Prerequisites: Successful completion of Speech 407 and Speech 415.

430. Development of Speech and Language in Children.

Credit 3(3-0)

The growth of speech and language in children; theories of speech and language development. Prerequisite: Successful completion of Speech 380.

431. Organic Disorders.

Credit 3(3-0)

A study of theories, principles and procedures for appraisals and treatment of deviant voice and articulation that accompany cerebral palsy, cleft palate, maxillofacial injuries and other physical anomalies. Prerequisites: Speech 380, Speech 404.

450. Aural Rehabilitation.

Credit 3(3-0)

A study of the major theories of speech reading and procedures for teaching visual communication skills to hearing-impaired persons. Prerequisites: Speech 407, Speech 425, Speech 340.

460. National and International Broadcasting.

Credit 3(3-0)

Analysis of systems of radio and television broadcasting in various countries, including development, programming philosophies, methods of financing, technical standards and cross-cultural relationship. Prerequisite: Junior or Senior.

468. Broadcast Management and Programming.

Credit 3(3-0)

Solving case studies of broadcast management problems, criticism of local and national programs broadcast; theories and practices in schedules for radio and television stations. Study methods and approaches for working with people and getting the most from their skills; invite local broadcast management personnel to provide professional insight. Prerequisites: Successful completion of Speech 350 and Speech 351.

491. Cable-TV Seminar.

Credit 3(3-0)

Review of the development of cable-television in the United States, including the law governing it, technical facilities necessary for an operation, methods of financing, type of programming content. The content will also include looking at the advantages and disadvantages for minorities programming. Prerequisites: Successful completion of Speech 255, and Speech 256.

510. Introduction to Stuttering.

Credit 3(3-0)

A study of theories, principles and procedures for the appraisal and treatment of persons with dysfluencies of speech. Prerequisite: Speech 380.

539. Methods of Teaching Speech and Theatre.

Credit 3(3-0)

A study of the aims, objectives, problems and difficulties experienced in teaching speech in the modern school. Special attention is given to the organization and coordinator of both speech and theatre curriculums, to planning

courses of study, its presentation, and to the selection of materials and equipment required of all Speech and Theatre Education majors. Prerequisites: 27 hours of Speech and 15 hours of Education and Psychology.

550. Clinical Practicum I.

Credit 3(3-0)

Supervised clinical experiences in the management of speech language and/or hearing disorders; includes interviews, diagnosing and formulating and carrying out a plan of therapy. Prerequisites: Successful completion of 12 hours of Speech Pathology and Audiology courses and consent of Clinical Supervisor.

551. Clinical Practicum II.

Credit 3(3-0)

A continuation of Speech 550. Prerequisite: Speech 550.

633. Speech for Teachers.

Credit 2(2-0)

Study and application of the fundamental principles of oral communication related to teaching and learning; speech activities and interpersonal relations identified with teaching and learning and the teaching profession; exercises for self-improvement in the various speech processes.

636. Persuasive Communication.

Credit 3(3-0)

A study of the theory and practice of persuasive speaking in the democratic society, including formal and informal persuasive speaking, types of proof, and the ethics of persuasion. Practice in the preparation and presentation of persuasive messages.

Theatre

300. Theatre Practice.

Credit 1(0-1)

Practical experience in staging and setting up technical design; backstage work in costume, make-up, stagecraft, lighting, etc., is required. This course should be taken three times by theatre majors.

301. Acting.

Credit 3(3-0)

A laboratory course designed to develop skill in voice, diction, and pantomime by means of readings, monologues, skits, and short plays for school and community; practical experience in the major A. and T. productions. Prerequisite: Speech 250.

302. Elements of Play Production.

Credit 3(2-2)

Study of basic principles in all aspects of production and application of these principles to particular situations; affords opportunities for practical experience in acting, directing, lighting, scenery design, and construction. Prerequisite: Speech 250.

400. Scene Design.

Credit 3(1-4)

A course in perspective, dealing with the representation of common objects, interiors, buildings, and landscapes as they appear to the eye. One hour lecture and two hours laboratory each week. Prerequisite: Theatre 441.

440. Play Directing.

Credit 3(3-0)

Elementary principles of staging plays; practical work in the directing of the one-act play; attention is given to the principles of selecting, casting, and rehearsing of plays. Exercises, lectures, and demonstrations. Prerequisites: Theatre 301, 302.

441. Stagecraft and Lighting.

Credit 3(3-0)

Study of principles of scenery construction and painting; practice in mounting productions for major shows. Prerequisite: Theatre 302.

457. Essentials of Playwriting

Credit 3(3-0)

Emphasis on creative work and class criticism; structure, characterization and dialogue are studied with reference to standard plays. Prerequisite: Consent of instructor.

500. History of the Theatre I.

Credit 3(3-0)

A study of theatre architecture, scenery, costume, methods of staging and production in Europe as well as a study of representative playwrights from Ancient Greece to Russia. Prerequisite: Theatre 302 or consent of instructor.

501. History of the Theatre II.

Credit 3(3-0)

A continuation of Theatre I beginning with Realism, Naturalism, Symbolism, Expressionism, and neo-Romanticism in Theatre down to the Avant-Garde Theatre in Europe. Prerequisite: Theatre 302 or consent of the instructor.

620. Community and Creative Dramatics.

Credit 3(3-0)

Theory and function of creative dramatics and applications in elementary education; demonstrations with children; special problems for graduate students.

630. Early American Drama and Theatre to 1900. Credit 3(3-0)

A study of significant developments in the American Theatre since 1900 as reflected through the major playwrights and theatre organizations.

631. Modern American Drama and Theatre since 1900 Credit 3(3-0)

A study of significant developments in the American Theatre since 1900 as reflected through the major playwrights and theatre organizations.

650. Theatre Workshop.

Credit 3-6(0-6)

A practicum involving the total theatrical experience. Involves units in acting, directing, stagecraft, designing and other such activities. Approximately 90 clock hours are devoted to technical production. Prerequisite: Senior standing or consent of instructor.

653. Principles and Practice of Stage Costume.

Credit 3(2-2)

The function of costumes for the stage and for television, and their relationship to other elements of dramatic production. Includes research in construction and authentic period forms. Prerequisite: Consent of instructor.

654. Problems in Acting. (Advanced)

Credit 3(3-0)

Acting problems arising from differences in the types and style of dramatic production; emphasis on individual and group performance. Prerequisite: Theatre 301.

655. Advanced Play Production.

Credit 3(3-0)

A study of modern methods of staging and lighting plays. Directing on a multiple set; arena staging, intellectual values; script analysis. Prerequisites: Theatre 302, 440, and 441.

656. Advanced Directing.

Credit 3(2-2)

A consideration of rehearsal problems and techniques as may be reflected in the 3-act play. In conjunction with the acting classes and the Richard B. Harrison Players, students direct projects selected from a variety of genres. Prerequisite: Theatre 440.

ADVANCED UNDERGRADUATE AND GRADUATE COURSES

Masters of Science in Engineering Listing

Num	ber and Course	Credit
602	Advanced Strength of Materials	3(3-0)
603	Statistical Thermodynamics	3(3-0)
609	Advanced Fluid Dynamics	3(3-0)
614	Mechanics of Engineering Modeling	3(3-0)
	Mechanical Vibrations	3(3-1)
628	Foundation Engineering	3(2-2)
635	Structural Steel Design	3(3-0)

642	Design by Finite Element Methods	3(3-0)
644	Matrix Analysis of Structures	3(2-2)
648	Numerical Analysis for Engineers	3(3-0)
652	Theory of Plates and Shells	3(3-0)
656	Modern Composite Materials	3(3-0)
660	Selected Topics in Engineering	Variable (1-3)
666	Special Projects	Variable (1-3)
667	Intermediate Dynamics	3(3-0)
672	Theory of Elasticity	3(3-0)
675	Theories of Machining Processes	3(3-0)
679	Mathematical Theory of Plasticity	3(3-0)
681	Numerical Control in Manufacturing	3(3-0)
685	Mechanical Properties and Structure of Solids	3(3-0)
688	Experimental Stress Analysis	3(3-0)

ADVANCED UNDERGRADUATE (600-699) AND GRADUATE (700-799) OFFERINGS

Under the Master of Science in Engineering Degree Program

400-602. Advanced Strength of Materials

Credit 3(3-0)

Stress-strain relations as applied to statically indeterminate structures, bending in curved bars, plates, shells, and beams on elastic foundations; strain energy concepts for formulation of flexibility matrix on finite elements; bending in beams and plates, introduction to cartesian tensor notation and matrix structural analysis. Prerequisite: 440-336 or equivalent.

400-603. Statistical Thermodynamics

Credit 3(3-0)

Statistical mechanics and macroscopic properties from statistical methods. Equilibrium information, generalized coordinates, and general variables. Prerequisite: 440-442 or equivalent.

400-609. Advanced Fluid Dynamics

Credit 3(3-0)

Derivation of Navier-Stokes Equations, continuity equation and energy equation; exact solutions of Navier-Stokes Equations, invicid flow, potential theory, complex potentials and conformal mapping. Prerequisite: 440-416 or equivalent.

400-614. Mechanics of Engineering Modeling

Credit 3(3-0)

Engineering modeling techniques including time dependent integration

simulation models of systems, finite difference and finite element methods in mechanics. Prerequisites: 440-210, 440-336, 440-562 and 225-500 or their equivalent.

400-624. Mechanical Vibrations

Credit 3(3-1)

An introduction to the dynamics of systems with and without external damping, stability, lumped and distributed masses. Vibration isolation mounts and central systems are analyzed with classical differential equations, electromechanical analogies and computer methods.

Prerequisites: 440-336 and 440-337 or equivalent.

400-628. Foundation Engineering

Credit 3(2-2)

Subsoil investigations, analysis and design of foundations and other substructures. Caisson and cofferdam design and methods of construction—ground water control. Prerequisite: 410-564 or equivalent.

400-635. Structural Steel Design

Credit 3(3-0)

Theory and design of structural components: Tension members, compression members, beams, and connections. Theory and design of structural systems: single and multistory frames with gravity and lateral loads, arches, and composite construction. Prerequisite: 410-457.

400-642. Design by Finite Element Methods

Credit 3(3-0)

Application of standard finite element method computer codes to design problems. An introduction to axi-symmetric element models and complex programs such as NASTRAN and SPAR. Static, dynamic buckling solutions will be generated in-house to contemporary and classical elasticity and structures problems. Prerequisite: 400-614.

400-644. Matrix Analysis of Structures

Credit 3(2-2)

Lecture and laboratory. Review of matrix algebra; statically and kinematically, indeterminate structures; introduction of flexibility and stiffness methods; applications to beams, plane trusses and plane frames. Prerequisite: 410-457 or equivalent.

400-648. Numerical Analysis for Engineers

Credit 3(3-0)

Scientific programming, error analysis, matrix algebra, eigenvalue problems, curve-fitting approximations, interpolation, numerical differentiation and integration, solutions to simultaneous equations, and numerical solutions of differential equations. Prerequisite: consent of instructor.

400-652. Theory of Plates and Shells

Credit 3(3-0)

Introduction to plane plate theory; membrane stresses in shells with axial symmetry; cylindrical shells; application in the design of shell roofs, tanks, pipelines and pressure vessels. Prerequisites: 410-455 or 400-602 or equivalent.

400-656. Modern Composite Materials

Credit 3(3-0)

Basic concepts of strength, stiffness, micro-mechanics, fracture, time-dependent properties, interfacial relationships, etc. as related to composite materials. The properties and fabrication of reinforcement materials such as whiskers, polycrystalline inorganic fibers, metals, and boron filaments, glass, fibers, reinforced plastics, metals, and other modern composite materials. Pre-requisite: 400-602.

400-660. Selected Topics in Engineering

Credit Var. (1-3)

Selected engineering topics of interest to students and faculty. The topics will be selected before the beginning of the course and will be pertinent to the programs of the students enrolled. Prerequisite: consent of instructor.

400-666. Special Projects

Credit Var. (1-3)

Study arranged on a special engineering topic of student and faculty member, who will act as advisor. Topics may be analytical and/or experimental and encourage independent study. Prerequisite: consent of instructor.

400-667. Intermediate Dynamics

Credit 3(3-0)

Review of particle and system dynamics, then introduction to rigid body dynamics with solution techniques for the nonlinear systems of ordinary differential equations as initial value problems. Angular and linear momentum, energy and Lagrangian methods of body problems. Generalized variables, small vibrations, gyroscopic effects and stability. Prerequisite: 440-337 or equivalent.

400-672. Theory of Elasticity

Credit 3(3-0)

Introduction; stress; strain; stress-strain relations; energy principles; special topics. Prerequisites: 225-300 and 440-336 or equivalent.

400-675. Theories of Machining Processes

Credit 3(3-0)

Material behavior characteristics. Metal cutting analysis, mechanics of chip formation, thermal aspects, built-up-edge and chip curl, tool wear and tool life. Three dimensional machining. Cutting fluids, cutting tool material. Unconventional machining processes: electric discharge machining (EDM), electro chemical machining (ECM), Ultrasonic grinding, electron beam, laser, plasma-arc. Economics of machining processes. Prerequisites: 440-226 and 225-500 or equivalent.

400-679. Mathematical Theory of Plasticity

Credit 3(3-0)

A review of elasticity including the stress and strain tensors, transformations and equilibrium and elastic behavior. Theories of strength, plastic stress/strain, classical problems of plasticity including thick-walled pressure vessels and rotating cylinders in elastic-plastic conditions, slip line theory with applications. Prerequisites: 225-500 and (410-562 or 400-672) or equivalent.

400-681. Numerical Control in Manufacturing

Credit 3(3-0)

N/C systems, coding, feedback, point to point positioning and continuous path contouring, programming commands and addresses. Preparing manuscripts for multi-axis operations. Interpolation: linear, circular, parabolic for continuous path control. Preparatory functions, manuscript for a twoaxis lathe. N/C electronics. Prerequisites: 440-210 and 440-226 or equivalent.

400-685. Mechanical Properties and Structure of Solids

Credit 3(3-0)

An examination of the elastic and plastic behavior of matter in relation to its structure, both macroscopic and microscopic. Major representative classes of materials to be examined are thermoplastic materials, elastomers, glasses, ceramics, metals, and composites. Prerequisite: 440-560.

400-688. Experimental Stress Analysis

Credit 3(3-0)

Principles and methods of experimental stress analysis. Photo-elastic and micro-measurement techniques applied to structural models. Prerequisites: 410-457 or 400-602 or equivalent.

UNDER THE MASTER OF SCIENCE IN INDUSTRIAL ENGINEERING Advanced Undergraduate (600-699) Course Offerings*

430-615. Industrial Simulation

Credit 3(3-0)

Study of the GPSS (i.e., General Purpose Simulation System) language including a term project. Review of other simulation languages, such as: 1) Industrial Dynamics, 2) GSMP, 3) GASP, and 4) SIMSCRIP. Prerequisites: 430-210 and 430-320 or consent of instructor.

430.626. Systems Analysis and Design

Credit 3(3-0)

Analysis and design of systems, including management requirements, decision making levels, economic justification, and implementation. The computer is considered as a tool in analysis and design as well as one component in the total system. Prerequisite: graduate standing in engineering.

430-640. Intermediate Engineering Economy

Credit 3(3-0)

Review of traditional methods. Replacement analysis. Capital planning and budgeting. Risk and uncertainty methodologies. Decision tree analysis. Multiple criteria analysis. Prerequisite: 430-320 and 430-460 or consent of instructor.

430-649. A Survey of Operations Research Methodologies Credit 3(3-0)

Operations research models such as linear programming, inventory and queuing, theory are derived and applications presented. Prerequisite: 225-117 or consent of instructor.

430-650. Operations Research

Credit 3(3-0)

Quantitative management decision making formulation of deterministic models of processes with orientation to optimization by use of digital computers. Prerequisites: 430-480 or equivalent.

430-658. Project Management and Scheduling

Credit 3(3-0)

Project scheduling with CPM and PERT. Scheduling within resource constraint. Cost scheduling. Cost estimation with emphasis on learning curves. Assembly line balancing. Introduction to theory of sequencing/scheduling with applications of priority rules and Heuristic Methods. Prerequisite: 430-320 or consent of instructor.

430-660. Selected Topics in Engineering

Credit Var. (1-3)

Selected engineering topics of interest to students and faculty. The topics will be selected before the beginning of the course and will be pertinent to the programs of the students enrolled. Prerequisite: consent of instructor.

430-662. Reliability

Credit 3(3-0)

Review of probability theory; combinatorial reliability; catastrophic-failure models; system reliability; reliability improvement; statistical paramater and interval estimation for reliability functions. Prerequisite: 430-320 or consent of instructor.

430-644. Safety Engineering

Credit 3(3-0)

History. Legislation. Engineering safety analysis. OSHA (i.e., Occupational Safety and Health Act). Safety program orientation and procedures. Prerequisite: senior standing in engineering or consent of instructor.

430-665. Man/Machine Systems

Credit 3(3-0)

Human engineering approach to the analysis of systems development cycle. Function allocation between man and machine. Design implications of capabilities and limitations of human beings. Design of controls and displays. Design of individual and multi-man-machine work areas. Engineering anthropometry. Maintainability design.

430-666. Special Projects

Credit Var. (1-3)

Study arranged on a special engineering topic of interest to student and faculty member, who will act as advisor. Topics may be analytical and/or experimental and encourage independent study. Prerequisite: consent of instructor.

430-678. Engineering Management

Credit 3(3-0)

A brief review of engineering management history and its relationship to industrial engineering, operations research, management science, and technical engineering disciplines. Planning, organizing, staffing, directing and control-

ling an engineering environment. Prerequisite: senior standing in engineering or consent of instructor.

Officers of Instruction

Section 16

Elias G. Abu-Sabu (PE) Associate Professor of Architectural Engineering B.M.E., American University of Beirut; M.S.C.E., Ph.D., Virginia Polytechnical Institute.
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Mansel McCleave
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James McCoy
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- Mattie Reed Director of African Heritage Center and Lecturer B.S., Tuskegee Institute.

- Lewis Richards Assistant Professor of Industrial Technology B.S., Hampton Institute; M.S., A. and T. College. Saundra M. Riggs Visiting Instructor of Art B.A., North Carolina Central University; Master of Product Design, North Carolina State University at Raleigh. Richard Robbins Associate Professor of Economics B.S., A. and T. College; M.S., Ph.D., North Carolina State University at Raleigh. George L. Robinson Professor of Political Science B.A., M.A., Ph.D., New York University. B.S., A. and T. College; M.S., University of Illinois; Ph.D., Ohio State University. Ralph M. Ross Assistant Professor of Philosophy and Religion A.B., Knoxville College; B.D., M.Div., Interdenominational Theological Center. Randa Russell Professor of Physical Education A.B., Kentucky State College; M.S., A. and T. College; A.M., University of Michigan; M.P.H., University of Minnesota; Ed.D., University of Michigan. Emory W. Sadler Associate Professor of Psychology B.S., M.S., North Carolina State University; Ph.D., Emory University. Arthur Saltzman Associate Professor of Business Administration
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Rouse, Shirley B., B.S., M.S Associ. Ext. Agent, 4-H
Smoak, Ellen P., B.S., M.S
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Johnson, Mary H., B.S., M.A Staff Editor
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Davidson, Linda 4-H and Youth
Green, Terri, B.S Family Ed. & Nutr. & 4-H & Youth
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Thompson, Lynda Administration (Purchasing)
Wharton, Delores, B.S Administration & Communication
Sprueil, Linda, B.A Family Education and Nutrition

^{*} On Leave



Enrollment by Counties Section 16 in North Carolina

1979-80

Alamance	86	Hertford	44
Alexander	3	Hoke	21
Alleghany	0	Hyde	1
Anson	27	Iredell	17
Ashe	0	Jackson	0
Avery	2	Johnston	22
Beaufort	33	Jones	21
Bertie	38	Lee	17
Bladen	36	Lenoir	40
Brunswick	32	Lincoln	6
Buncombe	16	Macon	0
Burke	12	Madison	0
Cabarrus	26	Martin	37
Caldwell	7	McDowell	6
Camden	0	Mecklenburg	89
Carteret	16	Mitchell	0
Caswell	38	Montgomery	26
Catawba	20	Moore	15
Chatham	25	Nash	35
Cherokee	0	New Hanover	33
Chowan	20	Northampton	82
Clay	0	Onslow	41
Cleveland	25	Orange	40
Columbus	39	Pamlico	4
Craven	43	Pasquotank	4
Cumberland	162	Pender	28
Currituck	0	Perquimans	5
Dare	1	Person	39
Davidson	55	Pitt	69
Davie	9	Polk	2
Duplin	45	Randolph	47
Durham	103	Richmond	24
Edgecombe	68	Robeson	62
Forsyth	231	Rockingham	100
Franklin	32	Rowan	44
Gaston	33	Rutherford	6
Gates	13	Sampson	55
Graham	1	Scotland	31
Granville	46	Stanly	20
Greene	13	Stokes	11
Guilford	_	Surry	6
Halifax	96	Swain	1
Harnett	23	Transylvania	2
Haywood	0	Tyrrell	3
Henderson	8	Union	13

Vance	15	Wilkes 6
Wake	73	Wilson 49
Warren	24	Yadkin 1
Washington	18	Yancey 19
Watauga	0	TOTAL 4, 191
Wayne	79	

Enrollment by Out-of-State Students

Section 17

	1973	9-00	
Alabama	10	Nevada	0
Alaska	0	New Hampshire	1
Arizona	0	New Jersey	87
Arkansas	6	New Mexico	6
California	3	New York	133
Colorado	4	North Dakota	0
Connecticut	27	Ohio	12
Delaware	20	Oklahoma	16
Dist. of Colum	102	Oregon	0
Florida	19	Pennsylvania	61
Georgia	26	Rhode Island	3
Hawaii	3	South Carolina	158
Idaho	0	South Dakota	1
Illinois	12	Tennessee	15
Indiana	5	Texas	2
Iowa	0	Utah	0
Kansas	0	Vermont	0
Kentucky	1	Virginia	119
Louisiana	2	Washington	1
Maine	2	West Virginia	4
Maryland	55	Wisconsin	0
Massachusetts	13	Wyoming	0
Michigan	15	Territories	0
Minnesota	0	U.S. Citizens	
Mississippi	2	Abroad	
Missouri	0	Foreign	. 270
Montana	0	TOTAL	1,216
NT .11		IOIAL	.,210



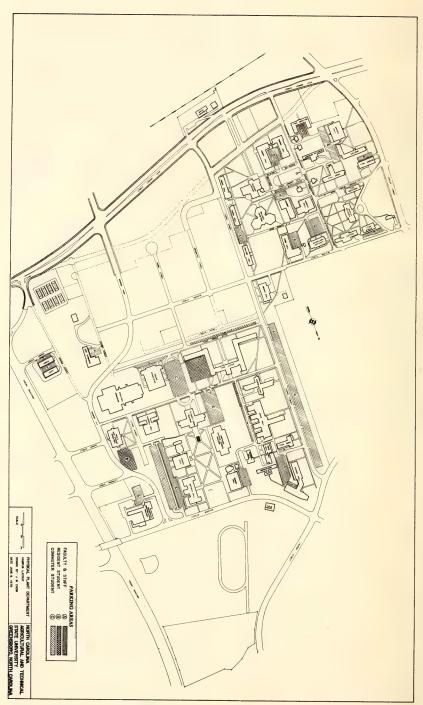
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